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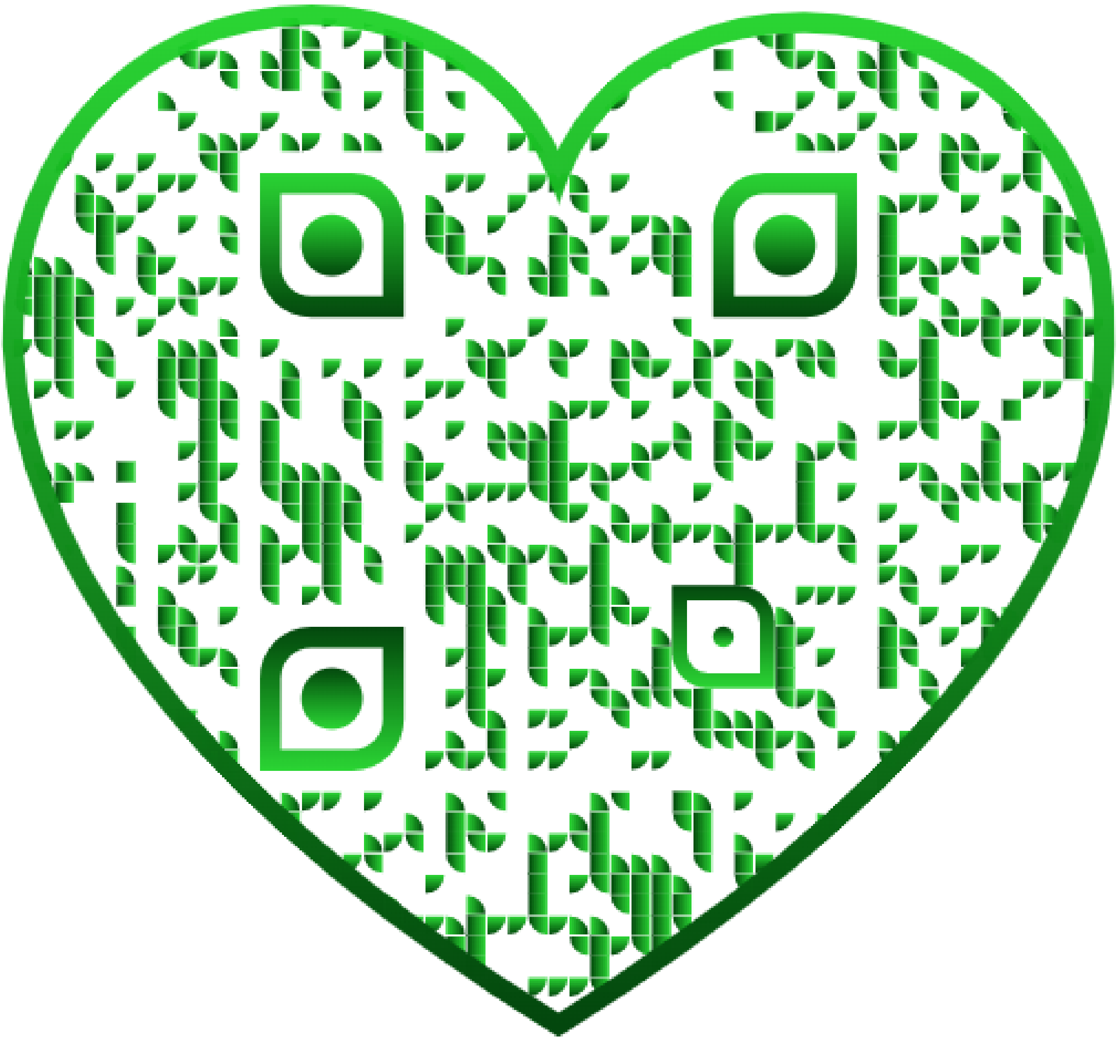

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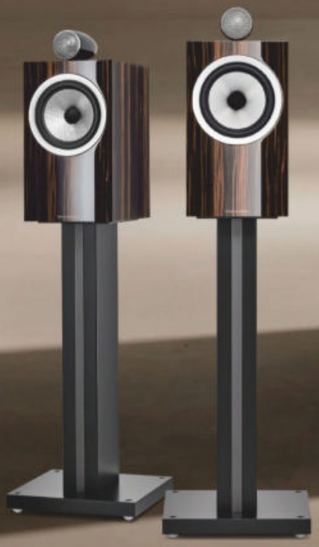

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AUDIO ESOTERICA

No 1 2025

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Printed by IVE GROUP

Distributed in Australia and NZ by Ovato **ovato.com.au**

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CHASING PURITY

The latest addition to Musical Fidelity's high-end M8 range (which includes the M8x Vinyl phono stage reviewed on page 40), the M8x DAC ($7,200) has been meticulously designed to deliver the highest performance a DAC/headphone amplifier can provide at this level.

To that end, the M8x DAC features a fully balanced design architecture, ultra-low jitter technology, the use of Class A discrete analogue amplification and high-resolution audio support — all to ensure it can deliver "exceptional audio quality" with as little noise and interference on the audio signal as possible.

Inside are two 32-bit ES9038Q2M DAC chips in a dual differential mode, which feed the balanced output stage and headphone amp. A proprietary clock design ensures low jitter levels, as does an ultra-low-noise regulator optimised for hi-res audio.

A key element to the M8x DAC's performance is a fully discrete design, with individual components in the output stage instead of integrated circuits or chips. Musical Fidelity's reasoning behind this choice is sound: efficient, integrated chips don't tend to offer the "neutral, natural, dynamic or vivid" sound crucial for a Musical Fidelity product, compared with what's achievable from more traditional discrete designs that use thousands of individual elements (such as capacitors, resistors and transistors). "That makes for an extended design process, but in our opinion results in the best sound for your money," says the company.

High-resolution files up to 768kHz PCM, DSD512 and MQA are supported via USB, with three opticals also present alongside single coaxial, AES/EBU and RCA inputs. Additionally, RCA and balanced XLR outputs join two headphone sockets — 6.3mm and 4-pin XLR.

The power supply for digital and analogue circuitry is naturally isolated to prevent any high-frequency interference. Eight digital filters are available for PCM audio playback, and upsampling can be turned on and off.

The headphone amplifier stage also uses a fully discrete and balanced design, with Class A operation powering headphones with a 30-ohm impedance or higher. The brand says the M8x is capable of driving both power-hungry and low-impedance headphones, down to 8 ohms.

Additionally, the M8x DAC should be easy to repair and maintain, as the individual discrete components can be serviced as they are always in manufacture, whereas the integrated chips (used in the M6x DAC) can get outdated or go out of production.

Visually, the M8x DAC matches the rest of the component range with a thick extruded aluminium chassis that acts as a Faraday cage to protect the internal circuits from external noise and vibrations.

In the pursuit of the least interference on the signal path, Musical Fidelity has also opted not to use a display or any wireless features. While many products these days have attempted to combine performance with convenience features, Musical Fidelity is chasing the purest, cleanest audio signal delivery with its M8 products.

For more information, contact Audio Marketing on (02) 9882 3877 or visit **www.audiomarketing.com.au**

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Musical Fidelity Nu-Vista DAC Wins Big

Awarded DAC of the Year at the Australian Hi-Fi Show

Musical Fidelity continues to dominate the hi-fi world, with their Nu-Vista DAC earning the prestigious DAC of the Year award at the recent Australian Hi-Fi Show.

The Nu-Vista range, named after its signature Nuvistor valves, includes eight models—amplifiers, DACs, phono stages, and more—all renowned for their exceptional performance.

Since its launch, the Nu-Vista lineup has consistently won global accolades, offering top-tier sound at prices that undercut much of the competition.

The Nu-Vista DAC delivers breathtaking clarity and depth, making it a standout in digital audio. Whether you're upgrading your system or building from scratch, Musical Fidelity's award-winning range is a benchmark for quality and innovation.

Visit us to experience its magic firsthand.

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Rega Planar 3 RS Turntable

Price: $2,199 (with Nd5 Cartridge)

Rega has been a cornerstone of quality turntables since 1973, blending simple, reliable engineering with exceptional sound. The Planar 3 RS (Rega Special), building on the beloved Planar 3, elevates vinyl playback to new heights.

Priced at $2,199, this turntable offers incredible value—especially considering the standard Planar 3 retails at $1,599 (without cartridge), and the included Nd5 cartridge alone is worth $650.

Featuring a stunning aluminium laminate plinth for reduced resonance and enhanced rigidity, the Planar 3 RS also includes the Reference ELBT belt and Neo Mk II power supply (combined RRP $650).

Fitted with the award-winning Nd5 moving magnet cartridge, this turntable delivers crisp, detailed sound that vinyl enthusiasts will adore.

From its sleek design to its precise engineering, the Planar 3 RS is a must-have for any serious audiophile looking to upgrade their setup affordably.

McIntosh C12000 Pre-Amplifier

Price: $29,900

A recent star on our showroom floor, the McIntosh C12000 pre-amplifier is a masterpiece of audio engineering. McIntosh seamlessly blends valve and solid-state technology, allowing you to switch between the warmth of tubes and the precision of solid-state outputs—perfect for tailoring your listening experience to the music or mood.

This two-chassis, dual-mono design isolates the audio section from power and control, ensuring uncompromised sound purity.

With 12 analogue inputs, including adjustable phono stages, it's a dream for vinyl lovers. Acclaimed by experts, the C12000 has been named Stereo Pre-Amplifier of the Year by Sound and Image, while What Hi-Fi? raves, "Listen to it and you'll discover that you are listening to music—pure, simple, unadulterated music." Reviewer Sasha Matson from Stereophile even purchased his review unit—a true testament to its quality.

At $29,900, this pre-amp delivers on McIntosh's legacy of excellence.

McIntosh
Balanced 6

Why Upgrade Now?

Elevate your audio experience with these new arrivals. The Rega Planar 3 RS offers unbeatable value for vinyl lovers, the McIntosh C12000 sets a new standard in pre-amplification, and Musical Fidelity's Nu-Vista DAC proves why it's an industry leader.

Visit our showroom to hear these products in action and discover the Len Wallis Audio difference—expertise you can trust since 1978. Don't miss out on transforming your listening experience!

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AUDIOVECTOR

EVER CLOSER TO MUSICAL TRUTH

If you're familiar with Audiovector, you probably know it hasn't been afraid to make a bold statement in its 45-year history. The Danish manufacturer produces a long line of loudspeakers ranging from its modestly priced QR1 standmounts ($1,300) through to its innovatively designed Trapeze Reimagined towers ($29,400), all the way up to its state-of-the-art R8 Arreté ($119,500), and its overriding goal has always been to get as close as possible to delivering the realism of a live performance.

Indeed, real musical experiences have always served as the ultimate reference for Audiovector, whose founder, Ole Klifoth, once said of his motivation: "I wanted to recreate the kind of sound I experienced in Tivoli's Concert Hall, 13th row, middle, from where I could take in both the overview and the details. Or in Jazzhus Montmartre, sitting about 3-4 metres from the musicians."

Getting closer still to that ultimate aim is Audiovector's brand-new flagship model, the R10 Arreté, which builds on everything that has come before it. As you might expect considering its reference status, the newly unveiled floorstanders don't hold back, packing 13 drivers in total, including a rear-facing bass line source for superior lower-end distribution.

Eight 12.7cm long-throw drivers ensure a fast, tight and accurate bass signature, creating the surface area of a 15-inch woofer and extending up to 2,000Hz with a tapered frequency response. Then you have twin 16.5cm units tackling the upper bass and lower midrange, plus a dedicated 16.5cm carbon sandwich midrange unit.

Handling of the higher frequencies, meanwhile, falls upon a pair of 38cm AMT tweeters — the primary unit covers 3,000Hz to 53,000Hz, while the second handles 20,000Hz to 53,000Hz. Thanks to their pleated mylar membrane and neodymium magnets, they promise exceptional lightness and control.

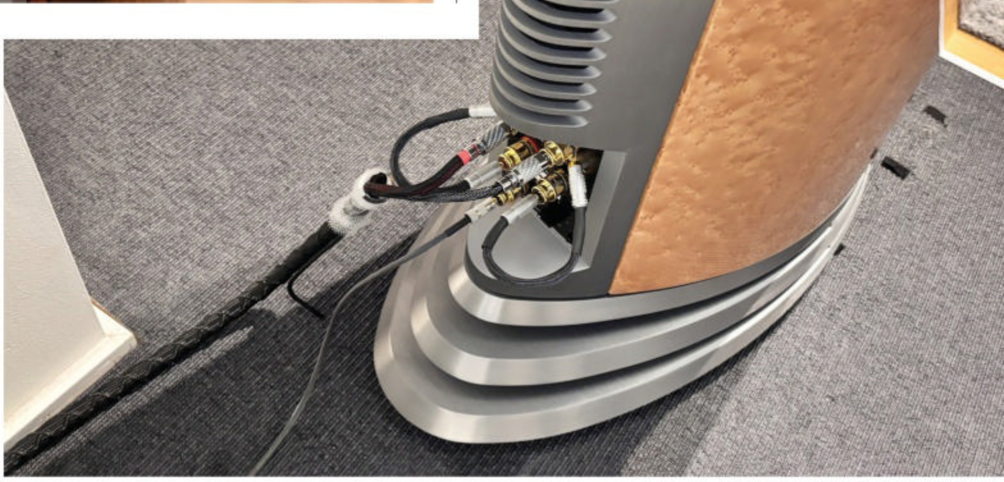
The drive units aren't the only weapons in the R10 Arreté's arsenal. The crossover has been designed and built "to the highest possible standards," boasting double cryogenically treated capacitors and distortion-optimised copper coils.

Rather cleverly, the flagship floorstanders are equipped with a unique damping adjustment feature for perfect amplification matching, offering three positions depending on your needs. The first position, for instance, is for transistor amps with a medium damping factor, while the third is for valve amps with a low damping factor.

The R10 Arreté also take advantage of Audiovector's Freedom Grounding technology for reducing movement-induced distortion between the drive units. A grounding filter processes unwanted currents from the driver chassis, with this signal then routed to the ground terminal of a wall socket or a grounded mains distribution unit, resulting in a cleaner sound.

Naturally, this is all wrapped up in masterful cabinetwork. The teardrop enclosure is made from vacuum-formed high-density hardwood fibreboard with extensive internal bracing, with a choice of three finishes — Canadian Birdseye Maple, African Mahogany Crotch and Italian Walnut Burl — shaping around to a 6061-grade aluminium baffle.

For more information, contact Class A Audio on (03) 8555 0735 or visit **www.classaaudio.com.au**



GOING ACTIVE

Having launched a special-edition active standmount last year in celebration of its 50th anniversary, of which only 150 were made, ATC is now bringing the special design to a wider audience by unveiling a mass-production version.

The SCM20ASL become the British company's most compact active speaker and has been perfected for small-to-medium listening rooms. ATC argues that while passive speakers remain popular for good practical and economical reasons — the company still makes several pairs itself, after all — active designs bring several performance benefits, including greater dynamic range due to the elimination of passive crossover losses; more crossover accuracy due to their fixed filter 'load'; and improved driver control, frequency response, synergy and efficiency due to the amplifier and speaker being optimally matched and integrated.

The two-way design combines ATC's highest performing in-house drive units with suitable onboard amplification, specifically a 15cm 'Super Linear' mid/bass driver and 25mm 'S-Spec' soft-dome tweeter, driven respectively by 200 watts and 50 watts of Class A/B MOSFET power.

The driver's motor assembly benefits from ATC's proprietary SL (Super Linear) magnet technology, which works to reduce distortion from the upper bass and into the midrange. Meanwhile, the high-frequency unit's dual suspension and high-energy 2.1-tesla motor combine to deliver a response "well beyond" 20kHz.

The active, analogue 2nd-order Linkwitz-Riley crossovers operate at line level for maximum efficiency, with an all-pass filter optimising the phase response in order to improve tonal balance and stereo imaging.

Balanced XLR connections are the order of the day, and you can tweak the input sensitivity via the rear-panel controls to suit your source and preamplifier. You can also adjust the bass output to suit your room using the low-frequency shelf control, with ATC adding that the SCM20ASL's sealed, rigid and well-braced cabinet ensures "exceptionally well-controlled bass" even in smaller spaces or when situated close to walls.

Handbuilt in the UK, the ATC SCM20ASL comes in a wide variety of colour finishes, including standard ($12,950) and premium ($15,750) cherry, walnut and oak veneers, as well as high gloss black or white ($16,600).

For more information, contact Pure Music Group on (04) 0950 4805 or visit **www.puremusicgroup.com**

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SWING AND A HIT

While the words "affordable" and "accessible" can never really be associated with Dan D'Agostino, with many of its wares falling into 'price on request' territory, the US company can just about get away with describing its latest integrated amplifier, the Pendulum, as "entry-level", despite the fact that it still costs a cool $29,995.

Representing D'Agostino's effort to reach a broader audience of audio enthusiasts while maintaining the performance standards associated with the revered brand, the Pendulum introduces a re-engineered version of the JFET input circuit topology originally developed for the company's $85k Momentum C2 preamplifier.

Delivering 120W per channel into 8 ohms (and doubling to 240W into 4 ohms), the Pendulum derives its power from a custom 750VA toroidal transformer and 25,000 μF capacitor bank — substantial specs for a unit of its relatively compact dimensions.

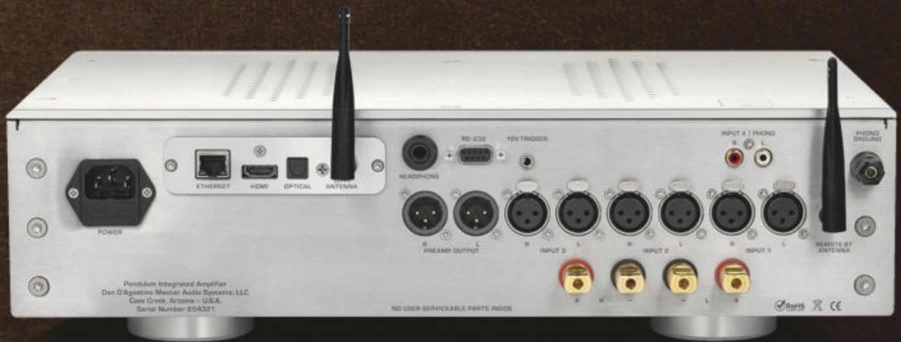
This robust power supply implementation also incorporates sophisticated filtering to eliminate RF noise from AC powerlines, and addresses issues like asymmetric power waveforms — details that will certainly appeal to serious audiophiles concerned with clean power supply.

On the connectivity front, the standard configuration provides four analogue inputs — one single-ended RCA and three balanced XLR (including a theatre passthrough for home cinema integration), plus balanced preamplifier outputs for subwoofer integration.

And if you want a little extra, you can pay a little (relatively speaking) extra by adding a phono stage with 60dB of gain for moving-coil cartridges ($1,795), and/or a comprehensive digital module offering optical, HDMI, Ethernet and wi-fi connectivity ($3,495).

The latter not only natively supports PCM signals up to 32-bit/384kHz and DSD signals up to DSD256 (11.2MHz) but also opens the gateway to streaming services including Tidal, Qobuz and Spotify, while offering MQA decoding for compatible files. It is due to receive Roon Ready certification shortly, too.

Aesthetically, the Pendulum maintains D'Agostino's distinctive design language, featuring a central LCD display



VOLUME
DAN D'AGOSTINO

DAN D'AGOSTINO
MASTER AUDIO SYSTEMS
INPUT 1

THE CENTRAL DISPLAY DIGITALLY REPRESENTS THE ANALOGUE METERS FEATURED ON OTHER D'AGOSTINO AMPLIFIERS, INSET INTO THE ICONIC ALUMINUM CASEWORK WITH A COPPER TRIM.

that digitally mimics the Swiss watch-inspired analogue meters found on the company's higher-end models.

This display serves multiple functions beyond volume indication, providing real-time updates on status, functions and even metadata from digital music sources.

The Pendulum also comes with a Bluetooth-enabled remote crafted from Delrin, whose own LCD screen mirrors information on the main display. Fancy!

SPECIFICATIONS

Frequency response: 1Hz – 80kHz, -0.5dB / 20Hz – 20kHz, +-0.01 dB
Signal-to-noise ratio: 100 dB, unweighted; 95 db A-weighted
Output power: 120W (8Ω); 240W (4Ω)
Inputs: RCA; 3 x balanced XLR
Input impedance: 1MΩ
Outputs: Balanced XLR; 6.33mm headphone
Output impedance: 1Ω
Dimensions (HWD): 11.8 x 43.2 x 35.6cm
Weight: 15.9kg

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SOURCE
VOLUME
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GRYPHON AUDIO
DIABLO 333

Reviewer Ketan Bharadia

INTEGRATED AMPLIFIER

THE GRYPHON
VOLUME
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INPUT3
THE GRYPHON DIABLO 333

Gryphon Audio is a Danish high-end audio brand founded in 1985. Its first product was a moving-coil step-up unit, which in many ways set the template for components the company makes to this day. Since that auspicious beginning, Gryphon's products have always been positioned at the top end of the market, prioritising engineering purity and performance above all else.

The Diablo 333 amplifier is a fine example of the breed. It is the pricier of the company's two integrated options and sits in an extensive catalogue that includes almost every part of the audio chain. The breadth of Gryphon's output is wide for such a modestly sized brand and includes a complete record deck (including tonearm and cartridge) alongside various phono stages, integrated and pre/power amplifiers plus a small range of not-so-small speakers.

DESIGNED AND MANUFACTURED
IN DENMARK
BY GRYPHON AUDIO DESIGNS

Digital hasn't been ignored either, with a number of CD players and digital-to-analogue converters on offer. The company even makes cables and furniture, so it is possible to have a complete end-to-end Gryphon system if you desire. Impressive.

That adjective equally applies to the Diablo 333. This beast is all about big numbers. That starts with the base price, which at $39,995 sits near the top end of the scale as far as one-box designs go. This integrated is chunky but not oversized by class standards, though the all-in weight of around 50kg makes us pause for thought as we take the unit out of its smart wooden crate. You will need help unpacking it if you value a healthy back, and require an equipment support sturdy enough to resist folding under the pressure of all that weight.

POWER ON TAP

So, 333 watts per channel into an 8-ohm load. Let's just stop and think about that absurd figure for a second. That amount of power probably makes the Diablo the most powerful domestic amplifier we have tested.

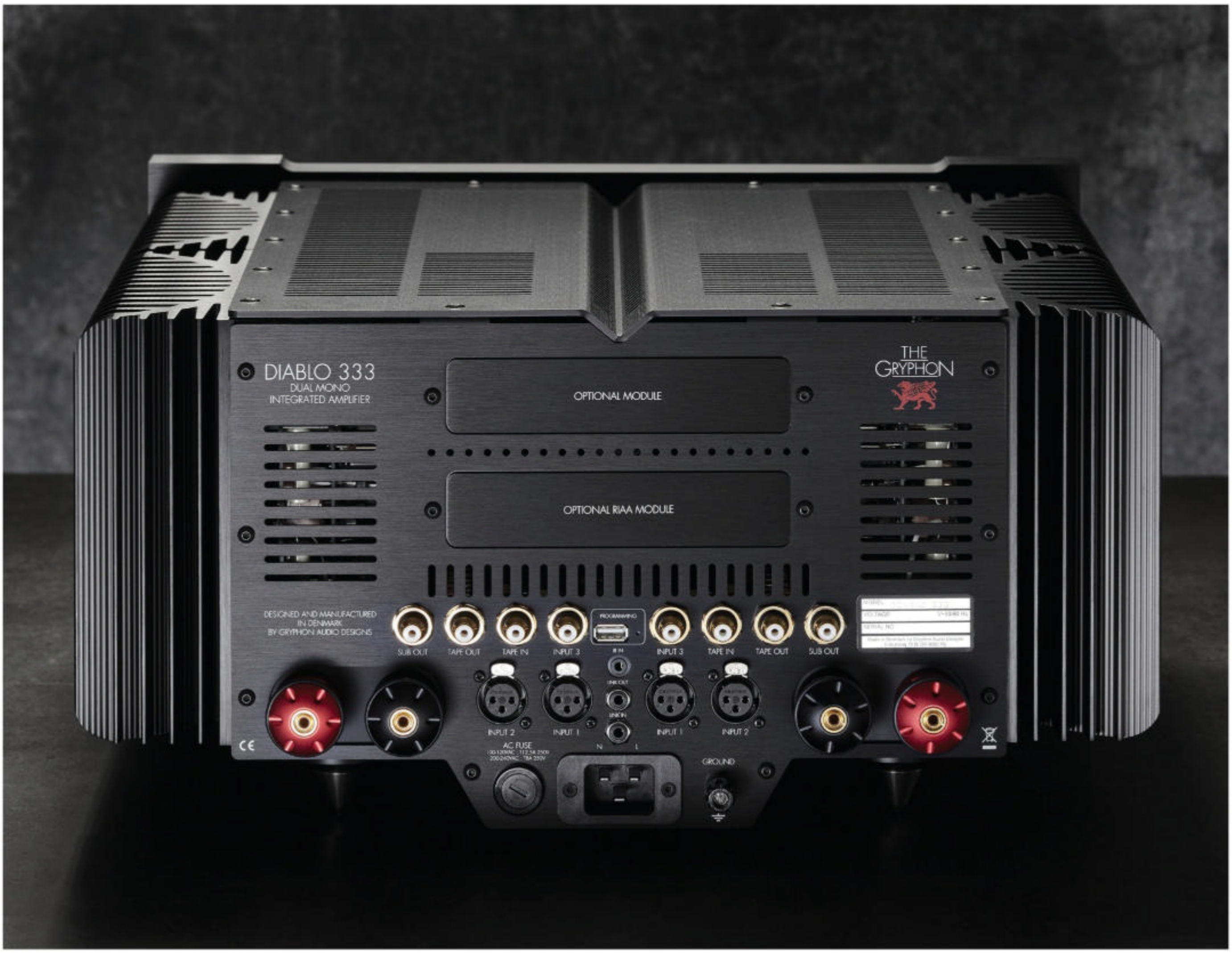
Astonishingly, that figure doubles as impedance halves, and almost doubles again to reach 1100 watts per channel into 2 ohms. We doubt there will be many situations where this amplifier comes up short when it comes to volume levels — in a home context at least.

However, if your room is the size of an aircraft hangar or you own some of the most electrically demanding speakers on the planet, we suspect Gryphon would happily point you towards its even pricier pre/power amplifier combos.

Take a look inside the Diablo and its construction is just as good as you would hope for, given the price. At its heart is a massive 2200VA dual mono toroidal mains transformer (a hefty 17.5kg in weight) and 68000uF of reservoir capacitance per channel. This arrangement ultimately feeds highly regulated power to different parts of the circuit, isolating the various sections from each other to keep the sensitive audio pathway as pure and noise-free as possible.

Gryphon's amplifier designs have always been dual mono in nature, and this one is no different.

A dual-mono design avoids the possibility of crosstalk and reduces



any channel-to-channel interference, so helping to maximise the circuit's performance, in particular when it comes to stereo imaging. The Diablo's circuit features zero global feedback — another Gryphon trait — and operates with an ultra-wide bandwidth (0.1Hz - 350kHz (-3dB limits) to ensure that musical transients are reproduced accurately.

Other characteristics of this amplifier's electronic design are that signal paths are kept as short as possible and the engineers have worked hard to reduce the use of internal wiring. Both of these things reduce signal degradation.

EXCEPTIONAL BUILD

This amplifier's overall construction quality is exceptional. Whatever you think of the Diablo 333's distinctive black-on-black aesthetic, there is no denying the quality of the build, fit and finish. Every panel lines up perfectly and the precision in terms of machining is exceptional. This is an expensive product and we're pleased to find that it has the luxury aura to back up its hefty price tag, which isn't always a given with high-end products from relatively small manufacturers.

The Diablo 333 also proves slick in use. It has a 4.3-inch TFT touchscreen display that's crisp and clear. The touchscreen is nice and responsive in use, making the initial set-up a breeze. It is all intuitive, allowing us to adjust everything from the name of an input and its relative sensitivity, to the amount of time the display stays on, with ease. You can add a pleasing remote handset to the list of positives: there is a nicely weighted metal unit that is simply laid out and responsive.

High-end integrated amplifiers don't tend to be packed to the rafters with features, and the Gryphon hardly bucks that trend. Anyone thinking of buying at this level prioritises performance, and so the manufacturers tend to remove many of the frills to maximise sound quality.

As standard, the Diablo 333 is a relatively simple line-level integrated amplifier, with four inputs (including two balanced XLRs) and both fixed and variable line-level outputs. There is provision, however, to add optional modules — the PS3 phono stage ($9,995) and the DAC3 digital-to-analogue converter ($11,995).

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> It has the luxury aura to back up its hefty price tag, which isn't always a given with high-end products from relatively small manufacturers

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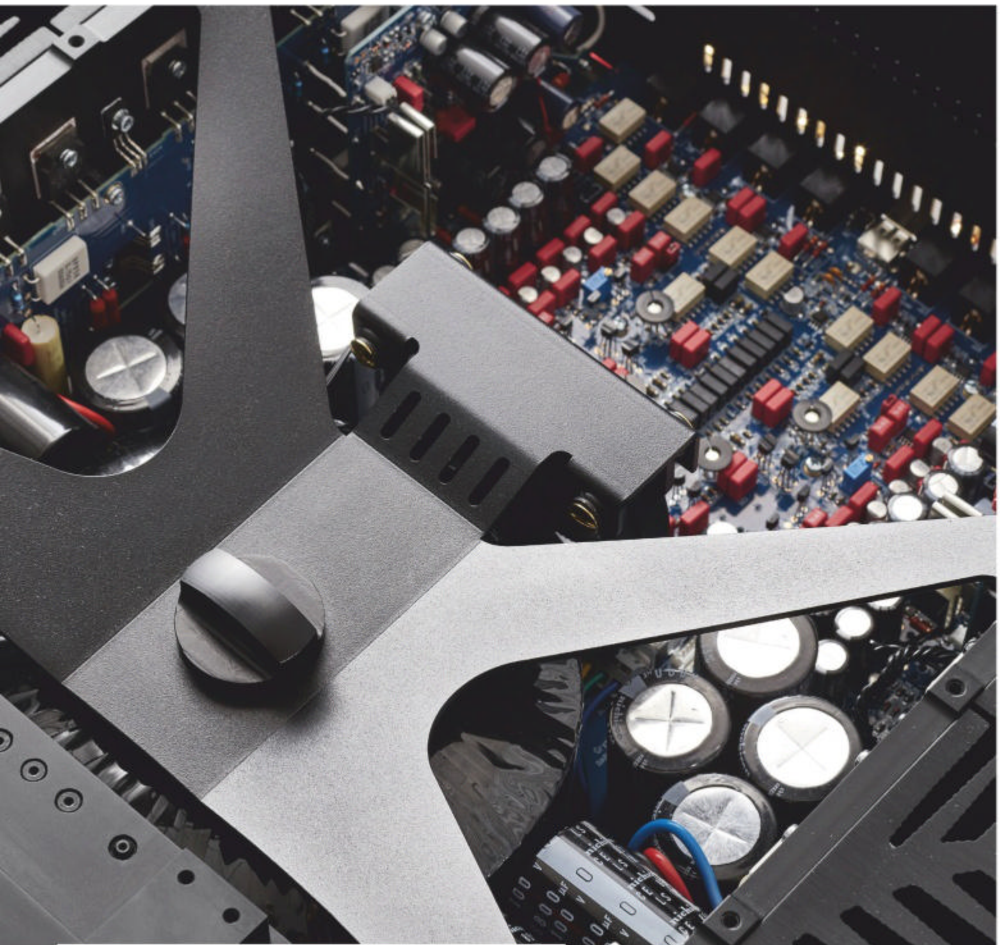


INPUT3
THE GRYPHON DIABLO 3

THE GRYPHON
GRYPHON DIABLO 333

Neither add-on is cheap, of course, but they are neat ways to expand functionality should you need it. This review sample is equipped with the phono stage but not the DAC module.

The DAC3 remains an interesting proposition, though. It is based around ESS Sabre's ES9039PRO chipset, which ensures compatibility with 32-bit/384kHz PCM and DSD512 files. There are five inputs — USB Type B, AES/EBU, BNC coaxial (two) and an optical. The circuit mirrors the dual-mono/zero global feedback philosophy of the rest of the amplifier and offers seven user-selectable digital filter options to allow the user to finetune the performance to their taste.

The price, just as with the phono module, is a big hurdle though, and there is no shortage of talented outboard alternatives on the market. Still, given the quality of the rest of the amplifier, we would be keen to give it a listen.

The PS3, meanwhile, is a switchable moving-magnet/moving-coil phono module, with the switching done through the Diablo 333's menu system. Its balanced Class A circuit also follows the same ideals of the main amplifier, and offers fairly conventional gain values of 42dB for MM cartridges and 64dB for MC designs.

We're glad to note that there is a fair bit of adjustability when it comes to cartridge loading options — done through a series of dip switches — so it shouldn't be difficult to optimise the performance of most moving coils.

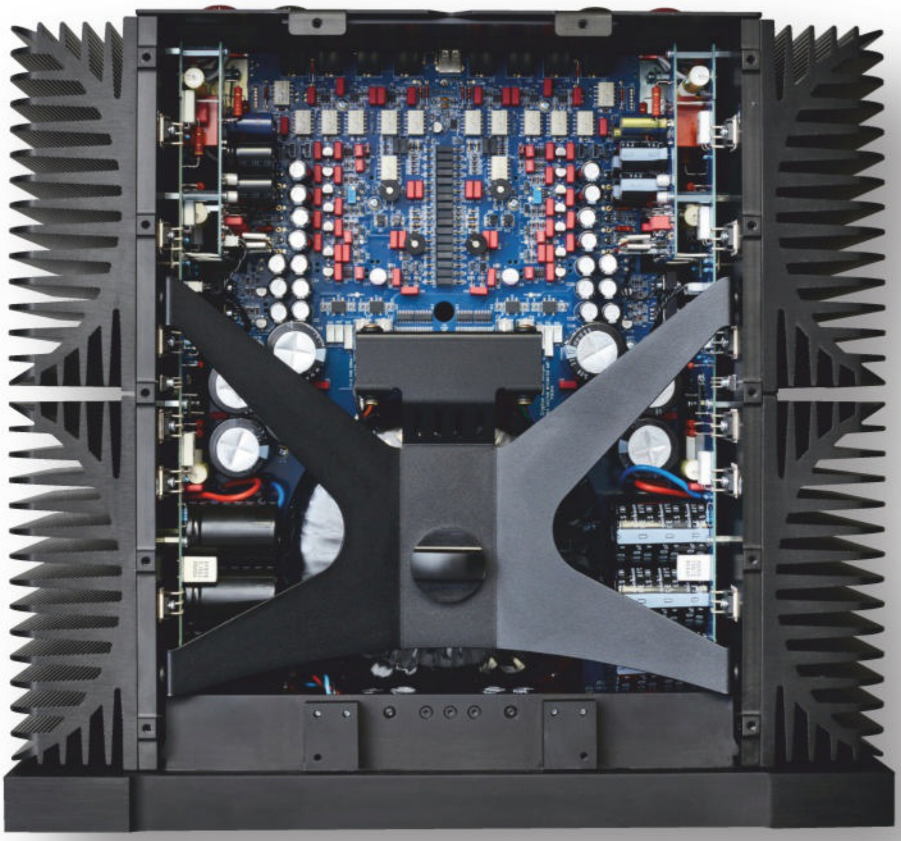
Note that the phono input is offered through a pair of balanced XLRs. There aren't many record players with this connection, so you will probably need to get your tonearm's lead terminated with the appropriate plugs. This is something your dealer should be able to help with. We used RCA-to-XLR adaptors instead, which isn't ideal but at least gives us the chance to get an idea of how the phono module performs.

Any amplifier at this level requires top-class partners. Such is the Gryphon's transparency that any cut corners are soon highlighted. So we queue up some of the best partners we can get our hands on: Naim's range-topping ND555/555PS DR music streamer; Vertere's SG-1 record player with the Xtrax MC cartridge; and the ATC SCM50, Wilson Benesch Discovery 3Zero and Epos ES-14N speakers. The Burmester 088/911 MkIII pre/power amp is on hand for comparison, too.

LISTENING SESSIONS

The Diablo 333's huge power output is central to its sonic presentation. It should come as no surprise that this amplifier is happy to play loudly. We try all our usual bass torture tracks, from Massive Attack's *Angel* and Nitin Sawhney's *Anthem Without Nation* to *Time* from the Inception soundtrack, and the Gryphon barely breaks a sweat.

It delivers some of the most grounded and punchy low frequencies we have heard in the five-or-so years in our current test room, and does it with class-leading composure. It is all so effortless that even the Burmester pre/power (180 watts per channel) sounds comparatively small and undernourished.



At the same time, large-scale dynamic swings come through with enthusiasm and utter conviction. There is an authority about this Gryphon integrated's performance that is a joy to behold. With Stravinsky's *The Rite Of Spring*, the Diablo 333 delivers each of music's seismic crescendos with an iron fist and unwavering control. Its presentation is breathtakingly physical and set against an astonishingly quiet background.

> Stereo imaging is a real highlight, being wonderfully expansive, carefully layered and beautifully focused. It never gets blurred...

The Gryphon delivers a huge sense of scale, too, helped by its muscular nature and the ability to render a panoramic and utterly stable soundstage. Stereo imaging is a real highlight, being wonderfully expansive, carefully layered and beautifully focused. It never gets blurred, even when the music gets demanding and the amplifier is pushed hard.

Working through different genres of music, we find that Gryphon's engineers have managed to combine beauty with the beast. Listening to Tracy Chapman's debut album, we're pleased to note that this steamroller of an amplifier is equally capable of finesse and subtlety. On *Fast Car*, Chapman's voice comes through with hope-tinged vulnerability intact. The amplifier sounds crisp and articulate, delivering the song's ebb and flow with unexpected agility.

Rhythms come through with verve and the tonal balance, though a touch dark in nature, is convincing. The amplifier is just a little subdued in the way it renders midrange/treble dynamic nuances, but it remains a terrific listen, sounding sweet and light when the music demands and relentlessly powerful when that requirement turns on its head.

The optional phono stage also performs well. It is impressively quiet in terms of noise and retains the composed nature of the line stage. Detail levels are good and music comes through in a musical and cohesive way, though perhaps not with *quite* the transparency required to fully justify its substantial price.

The use of adaptors here isn't likely to have helped, so we're willing to be open-minded as regards the phono stage's absolute ability. We're also mindful that an outboard phono stage adds yet another box into the system, which goes against the logic of buying an integrated amplifier in the first place.

CONCLUSION

Gryphon's Diablo 333 is a wonderfully versatile performer. It can speak quietly and wield a big stick at the same time, and that's a talent worth having. Rarely have we heard such a powerful unit sound so fleet-footed and musically cohesive.

In recent months, we've been fortunate enough to hear some world-class integrateds, including the Goldmund Telos 690 and Esoteric F-01/PS-01F, and are pleased to say that this Gryphon should be counted among them.

SPECIFICATIONS

Gryphon Audio Diablo 333

Price: $39,995
Warranty: 3 years
Power output: 333W (8Ω); 666W (4Ω); 1100W (2Ω)
Output impedance: 0,015Ω
Frequency range: 0.1Hz - 350kHz
Power supply capacity: 2 x 68.000uF
Gain: +38dB
Sub output gain: +12dB
Input impedance: 50KΩ (balanced); 30KΩ (single-ended)
Dimensions: 47.2 x 46.8 x 24.5cm
Weight: 50.6kg

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MARANTZ
GRAND HORIZON

by Becky Roberts

WIRELESS SPEAKER

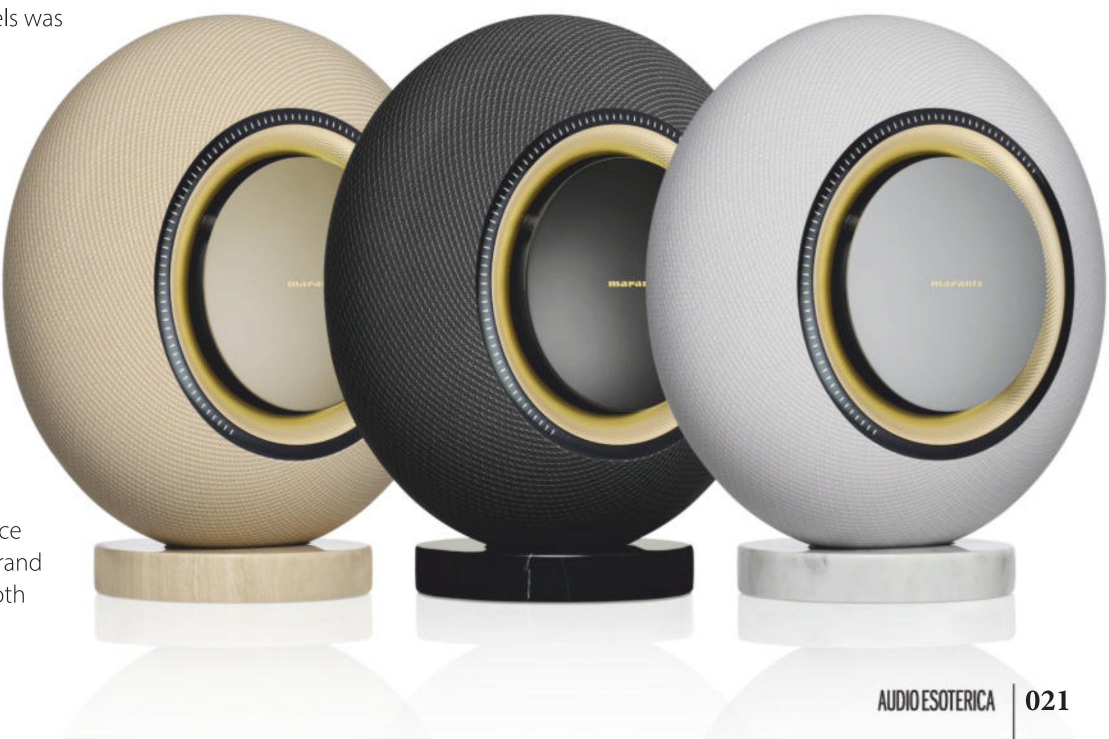
As is quite clear from the images accompanying this review, Marantz's Grand Horizon isn't your average wireless speaker. Indeed, its 'Grand' moniker, which distinguishes it from its smaller, more affordable Horizon sibling, represents not only Marantz's ambition here but also the size (50cm tall and wide), weight (21kg) and price ($9,500) of the speaker.

There's no getting around it; the Grand Horizon is a beast, albeit a beautiful one. And as probably the most expensive wireless speaker we've come across — priced similarly to a whole system of modest hi-fi separates — it has its work cut out to prove its value and rebut its instant impression of extravagance. Can a single wireless speaker really justify a $10k asking price?

Of course, the audience for a hi-fi separates system will be very different to the one considering an all-in-one solution like the Grand Horizon, which by nature offers everything you need in one compact (in relative terms!) box — no trails of connecting wires, complex equipment pairing or much room positioning to think about. Just simple, straightforward music delivery, hopefully with somewhat comparable sonic talents.

STATEMENT PIECE

It's inherently difficult (impossible even?) for any single unit costing this much to nail perceived value, but Marantz has given it a jolly good go. The company's goal for the two Horizon models was for them to embody 'modern musical luxury', and on the aesthetic front, that starts with the circular base, which is made out of natural marble stone and accounts for a good chunk of the speaker's considerable weight. Which is a good job really as a baseless Grand Horizon can be wall-mounted. (Never before have we struggled to lift a wireless speaker onto a table-top due to its weight. Our advice for transportation? Keep the Grand Horizon in its handle-toting cloth casing until it's in position, before then peeling it off.)



Marantz says it sampled more than 25 materials before deciding on the beautiful marble slab sitting before us.

Move up to the circular main chassis, which isn't spherical as such, being only half as deep as it is wide, and the quality of the construction is just as palpable. The woven fabric wraparound tightly hugging the chassis (although not so much that you can't pinch it) has a custom weave pattern with metallic sparkle flecks through it, looking very smart on our 'Midnight Sky' (dark grey/black) review sample. (Light grey/silver 'Moon Ray' and gold/beige 'Champagne' finishes are also available.) Apparently this fabric is produced in Austria and is, as you would hope, acoustically transparent.

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> …a 360-degree touch-control ring that borders the woofer's gold trim, and beautifully illuminates it with its 100 diamond-shaped LED indicators

But what steals the spotlight is what Marantz calls its 'AuraControl capacitive UI' — a 360-degree touch-control ring that borders the woofer's gold trim, and beautifully illuminates it with its 100 diamond-shaped LED indicators. That halo of light is, when in use, essentially a volume and playback control bar — and another implementation that took over 20 prototype versions to settle on.

Initially, however, its operation stumped both reviewers of the two Horizon models. We both assumed, based on similar capacitive implementations in other speakers, that sliding a finger from one point on the ring to another would increase/decrease the volume. Instead, you must place your finger on the ring where you would like the volume to settle (at 9 o'clock for pretty low volume, for example) and, after a moment, the LEDs meet your fingertip and the volume change occurs. It's certainly an "oooh" moment. Thanks to proximity sensors, too, the LED strip lights up automatically as you approach it — another neat touch.

To play/pause music, you simply tap the strip's bottom (6 o'clock) once; a double-tap skips forward a track while a triple-tap skips backward.

This action mostly behaves itself, although, as with more or less every integrated touch control we have encountered on hi-fi components, it isn't perfect, sometimes requiring you to repeat your action. (Alternative control is

> Marantz claims the Grand Horizon offers "the most spacious signal reproduction from a singular all-in-one speaker on the market"

available for those who prefer a hands-off approach — more on that shortly.)

Ultimately, we applaud Marantz's efforts to present the heir of luxury the price point demands. The Grand Horizon is more of a showpiece than any other of its kind we have tested.

STRIVING FOR SPACIOUSNESS

Without X-ray insight into the speaker's internals, you could still very well guess the placement of the Grand Horizon's eight drivers (and neodymium magnets). You have a one-inch silk dome tweeter and three-inch paper pulp midrange driver on each side, another one-inch tweeter flanked by another two three-inch midrange units at the top, and an eight-inch woofer (also made of paper pulp) that you can more or less see if you peer down behind the front, Marantz-badged part of the enclosure.

This patent-pending transducer configuration naturally facilitates a widespread sound, and with the drivers somewhat angled away from the centre of the system, and complemented by patent-pending DSP algorithms, Marantz claims the Grand Horizon offers "the most spacious signal reproduction from a singular all-in-one speaker on the market".

Driving them is a generous amount of firepower — 370 watts — from Marantz's next-gen GaN FET (Gallium Nitride Field Effect Transistors) switching amplifiers, of which the brand says: 'Compared to traditional silicon transistors, it offers significantly lower on-resistance, meaning it loses less power during switching. Its fast switching speeds ensure more control over the audio signal, enable high-frequency operation and deliver lower distortion and heat. Plus, its compact size frees up more space within the overall design for other essential audio components. The result is a superior listening experience achieved with speed and efficiency.'

ADD SOURCES... OR DON'T

Like pretty much every networked component from Marantz (and sister brand Denon for that matter), the Grand Horizon uses the Denon-built HEOS wireless music platform, which is a gateway to several music services, including Spotify, Tidal, Amazon Music, Deezer, Pandora, TuneIn, SiriusXM, iHeart-Radio, Mood:Mix and SoundCloud — controlled via the companion app.

The HEOS platform also facilitates multiroom setup and playback (at the cost of transmission being limited to 16-bit/44.1kHz), while either Horizon model can be paired with another to deliver a two-speaker stereo presentation.

AirPlay 2, Spotify Connect, Tidal Connect and Bluetooth are also part of the wireless connectivity picture. And if you're looking to connect an external

THE
GRYPHON

The Gryphon Diablo 333

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VOLUME
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INPUT3
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source, there are analogue, optical and HDMI (with Dolby Atmos support) inputs, as well as the option to hook up USB-C music drives. These sockets are a little tricky to see and access owing to their placement within a recessed panel at the Horizon's rear, but hopefully once you've connected your TV/audio sources and/or Ethernet cable (there is also wi-fi), you won't have to do it again.

Really, the Grand Horizon's feature set is as rounded as its chassis, and the great thing about established software systems such as HEOS is that it will likely be updated down the line when new streaming apps or protocols come along (so long as the product's hardware chip supports it, of course). So your Grand Horizon could, in a way, even get better in the future.

The app is worth playing around with when you first sit down with the Grand Horizon, if only to ensure the default system and playback settings are to your liking. You may well fancy flirting with the integrated My Mirage setting, too. This EQ tool can individually boost or reduce certain sonic elements — more specifically, 'warmth', 'spaciousness' and 'clarity' — to your liking via a simple slider. Adjusting each initiates a specific light display pattern, which is another lovely use of the LED touch panel.

THE MORE VIABLE HORIZON

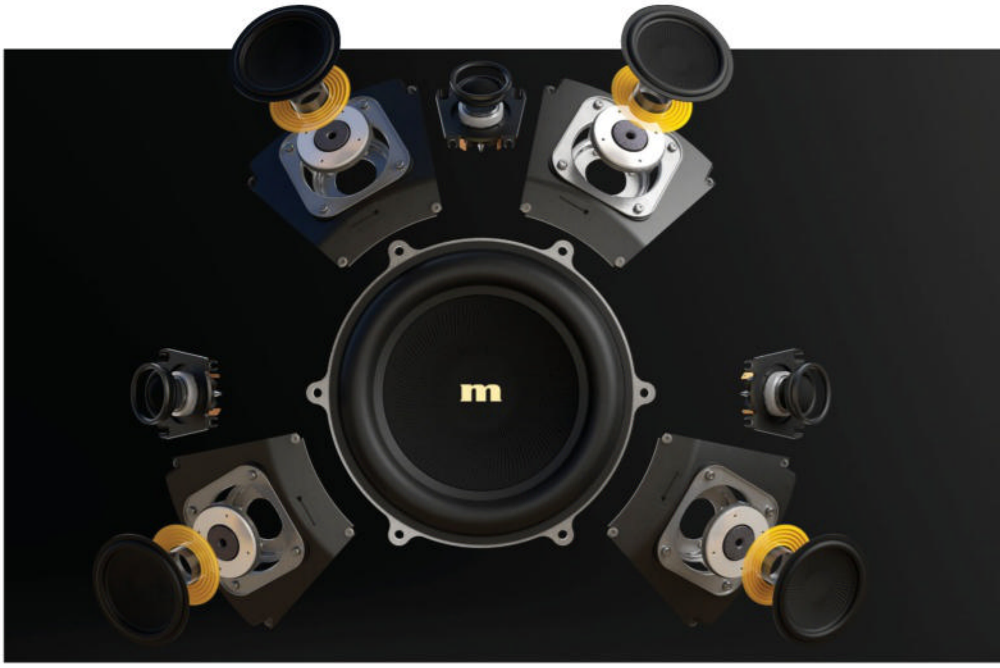
Despite the Grand Horizon being bigger and heavier, the standard Horizon is hardly dinky, being 36cm in diameter and weighing 12.5kg.

Naturally, the Horizon outputs less power than its sibling (310W), while other comparison points include the quoted maximum SPL of 104dB continuous and 114.5dB peak for the Horizon, versus a significantly higher 111dB/122dB (remembering that 3dB is a doubling of effective acoustic or electrical power), and also the low frequency response, quoted to 30Hz at -3dB and 22Hz -10dB for the Horizon, versus 28Hz at -3dB, and 18Hz at -10dB.

We doubt that anyone swayed by the Horizon's parallel visual charms will be less than satisfied by its aural ones. Those wedded to the merits of a traditional hi-fi system should not trade that idea for the Horizon: its sound is good, strong, powerful and suitable for small-to-medium-sized rooms, though like its sibling, limited by the relative lack of width a single unit can produce.

We assume that anyone shopping for such a speaker has sufficient money to expend on Marantz's "luxury" line of "beautiful objects", and we can reassure these well-heeled consumers that the Horizons also come with a strong dose of the company's innate focus on sound.

MARANTZ CREATED A CUSTOM-DESIGNED DRIVER ARRAY IT CALLS 'GRAVITY', WHICH AIMS TO DELIVER ROOM-FILLING SONICS.



We recommend you check that your Grand Horizon has the correct EQ position setting, depending on whether it is placed near a rear wall, in a corner, or out in the open. Oh, and just double-check that the 'Sound Mode' (found within the EQ menu) is set to 'Auto' (the default option, labelled as "Balanced sound for all inputs and formats") as opposed to 'Sound Master' ("Tuned for critical listening by the Marantz Sound Master") — puzzlingly, the latter somewhat muddies and thins the presentation, making it, to our ears anyway, rather unlistenable.

LISTENING SESSIONS

Thankfully, the preferred default delivery *is* listenable! We queued up *Three Hours* by Aldous Harding and her producer (and longtime PJ Harvey collaborator) John Parish, their contribution to the 2023 Nick Drake tribute cover album 'Endless Coloured Ways'.

It's an ethereal, electronic adaptation — a far cry from the breezy folk tune and finger-picking technicality of the original — and the opening organ drone, steady drumbeat and agile bass line provide a satisfying taste of the speaker's bass presence, revealing the benefits of combining an eight-inch woofer with a reasonably sized, solid enclosure.

The bass guitar and tambourine are easily discernible as the layers of instrumentation build on top of one another, and while we know there is more texture to both recorded instruments that the Marantz can't quite dig up here, the delivery is coherent and communicates the tone of the piece well.

The two folky vocals are distinctly layered, the Marantz offering the spaciousness and detail so that each can be appreciated both independently and in partnership. Despite that space, a sense of cohesion doesn't elude the delivery as the celestial electronic effects come in with purpose to give the cover track an apocalyptic mood (which, by the way, is echoed in the imagery of its accompanying five-minute film: https://www.youtube.com/watch?v=P1EuZcw05mU).

The Grand Horizon manages to capture the atmosphere of the room in which Peter Broderick recorded *Our Future in Wedlock* (a suitably titled work considering it was commissioned for a wedding!), and once again shows its ability to keep tabs on various musical strands without becoming confused.

Its weight is impressive for a wireless speaker. As we turn to Bon Iver's *THINGS BEHIND THINGS BEHIND THINGS*, his familiar fusion of layered synths, glimmering guitars and baritone vocal sound lush and full. There's no lack of thwack to the percussion later on in the brand-new 'SABLE fABLE' album, either.

There aren't many one-box speakers that can fill a room easily, without audible distortion creeping in when the volume gets pushed, yet the substantial driver array's output far belies the speaker's physical size, and when we hit the 75% volume mark — more than loud enough in our 9m by 4m room — it admirably held its cool, resisting sounding screechy.

The Marantz isn't very forgiving of low-quality or compressed-sounding recordings (Band of Horses' *Lights*, to give one example). And we couldn't help but feel that a final ingredient was missing: the dynamic elasticity key to truly *mastering* the ebb and flow — the rhythmic essence — of a piece of music.

CONCLUSION

Still, the Marantz Grand Horizon ticks a lot of the boxes demanded of modern music machines today. While the case for a separates system (or a stereo pair of active speakers) is strong at this price level when it comes to performance, if you are set on a one-box solution with a statement design and room-filling sound that go beyond what more affordable alternatives can offer, the Grand Horizon has plenty of appeal.

SPECIFICATIONS

Marantz Grand Horizon

Price: $9,500
Warranty: 5 years
Power: 370W
Drivers: 3 x 1in tweeter; 4 x 3in wideband; 8in woofer
Frequency response: 28Hz-20kHz (+/-3dB)
SPL: 111dB
Connections: RCA, optical, USB-C, HDMI eARC, Ethernet, Bluetooth
File support: 24-bit/192kHz PCM, 5.6MHz DSD, Dolby Atmos
Streaming: AirPlay 2, Spotify Connect, Tidal Connect, Amazon Music, Deezer, Pandora, TuneIn, SiriusXM, iHeartRadio, Mood:Mix, SoundCloud
Dimensions (HWD): 49.3 x 25.5 x 52.9cm
Weight: 21.3kg

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KWA 99
KWA 99

MODWRIGHT
KWA 99

Reviewer Greg Borrowman

MONO POWER AMPLIFIERS

While Modwright has been around as a company since 2000, it did not build its first product (the PH9.0 vacuum tube preamplifier) until 2003. Up until that point, the US company's founder and owner, Dan Wright, had been modifying other manufacturers' designs rather than producing his own. In fact, Wright had been in the audio modification business for many years prior to 2000 but had simply not bothered to incorporate as a legal entity.

The PH9.0's circuit topology was based largely on Alan Kimmel's 'Mu Stage' design, which itself was originally developed as a modification for the Dynaco ST70 stereo valve amplifier, then available as a kit for home DIY builders. Kimmel's original Mu Stage circuit was published in 1993 in *Glass Audio* magazine, but a version of it was used in a bestselling preamplifier kit developed by Welbourne Labs called the "Compleat Hybrid Line Stage" (and yes, it was spelt 'Compleat' rather than 'Complete').

Design input from Kimmel is evident in many of Modwright's designs because, according to Wright, a 'Solid State Music Stage' voltage gain stage developed by Kimmel is at the heart of its KWA 100 and KWA-100SE power amplifiers as well as its KWI 200 integrated amplifier. Indeed 'KW' in the model names stand for 'Kimmel/Wright', so the same is no doubt the case for the KWA 99 mono power amplifiers I am reviewing here.

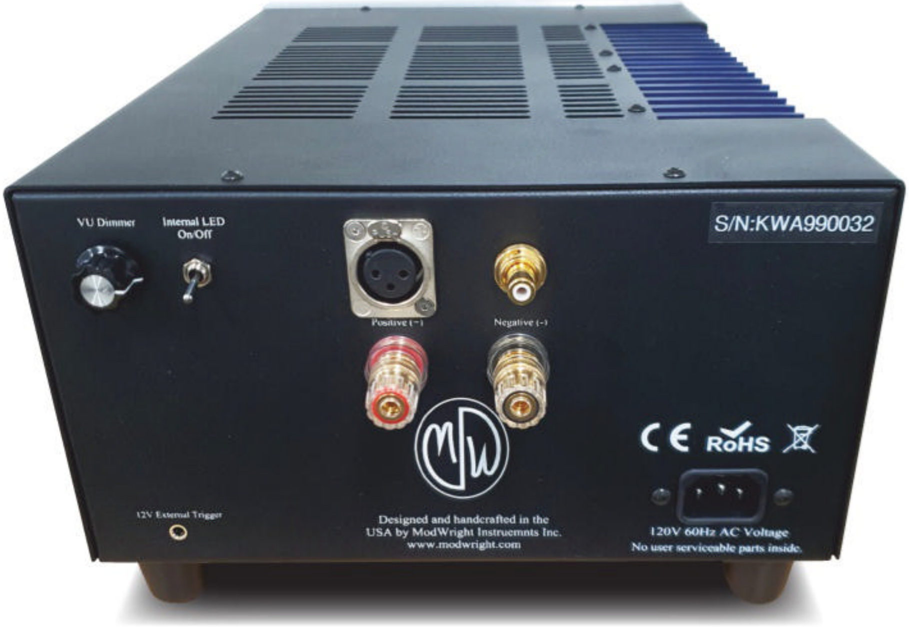
According to Wright, that trademarked Kimmel design is "a unique and proprietary design using all transistors, a single gain stage and zero global feedback. It is transformer input-coupled and direct-coupled from there out. Sonically, Alan feels that the circuit delivers the holographic imaging and tonal warmth of tubes but without any excessive coloration, while also delivering the sonic strengths of solid state, those being tighter and more controlled bass, extended highs and an extremely low noise floor."

Although Wright is a great fan of valves (he says the ear-opening moment that kick-started his interest in high-fidelity sound was when he first heard the Jolida JD-302B valve amplifier, which employed 12AX7, 12AT7 and EL34 valves), the Modwright KWA 99 is a solid-state design from input through to output. The output devices are current production Exicon Lateral MOSFETs configured in a conventional Class A/B topology, albeit operated with very high bias to mimic Class A operation.

Wright says that using these MOSFETs results in "unparalleled sound, performance and reliability," while the KWA 99 itself "offers the sound of our best amplifiers with an even greater degree of resolution, detail, and live sound".

Why Wright specifies the use of "current production" Exicon transistors is likely down to their history. You see, Exicon (its name stems from 'EXcellence In SemiCONductors') produced its first lateral MOSFETs (the ECF10N16 and ECF10P16) in 1993 and they became an instant hit with amplifier designers for their high level of performance — though it helped that Hitachi ceased production of its very popular 2SJ50 and 2SK135 MOSFET devices at roughly the same time! Exicon redesigned its range of lateral MOSFETs in 2015, and it is these newer devices that are used in the KWA 99.

One thing we learned when reviewing Modwright's PH 9.0 some years ago, which we believe is well worth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Negative (-)
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No user serviceable parts inside.

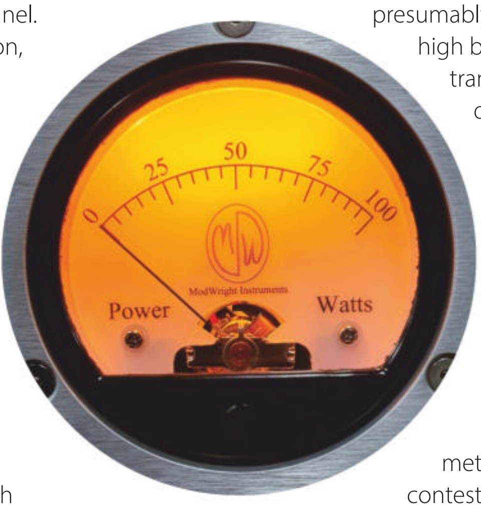
KWA 99
KWA 99
Power
Watts
PWR

repeating here — not least because we had entirely forgotten it ourselves — is that the Modwright logo reads the same no matter whether you look at it straight on, upside down or even in mirror-reverse. No matter what you do, that stylised 'M' becomes a 'W' and the 'W' becomes an 'M'. They don't make fonts this way so it must have been intentional on Wright's part, or that of his graphic designer. It's neat! We like to think that the two dreamed it up while having a bite in Nick's Bar and Grill, which almost neighbours the Modwright Instruments factory in Amboy, Washington, USA.

RETRO STYLING

As there are two separate chassis, there are two power buttons to press, which presented a slight problem for us as those buttons are recessed into the front panel and require being pressed in quite a way to activate. This means that if you, like us, have fat fingertips, you will likely need to use your ring or little finger to press the buttons in far enough to switch the amplifiers on. That said, they can also be powered on remotely, via a 12V trigger socket on the rear panel.

> "...circuit delivers the holographic imaging and tonal warmth of tubes but without any excessive coloration"



Once powered on, blue LEDs inside the chassis will flash on and off — or to be accurate, flash brightly and then not-so-brightly — for about 30 seconds until the internal circuitry has stabilised and the protection circuitry has established that nothing is amiss (such as a short-circuit on the output terminals, about which more in a moment). When this light show has finished, the LEDs remain on, for no good reason we could establish perhaps other than to improve the amplifier's appearance in a darkened room. These LEDs can, however, be deactivated via the rear-panel micro toggle switch.

As you can see in the image on the right, the KWA 99's heatsink fins are also blue, which we found rather unusual considering black-anodised heatsinks are the most efficient at dissipating heat from solid-state output devices. It seems that both the blue LEDs and heatsinks were the choice of Wright for the simple reason that, in his own words: "I like blue." We suspect that blue is almost as good as black in terms of thermal efficiency, though we did note that the KWA 99's heatsinks become quite hot, presumably because of the high bias current to the transistors. While we didn't measure the temperature, it was hot enough that it required real willpower to keep our fingers in contact with the metal for more than 10 seconds.

Power output meters are a hotly contested subject because unless your speakers present a constant and defined impedance (which no dynamic speaker does, though a few panel designs do, such as those made by Magnepan), the meters can never give an accurate indication of the power the amplifier is delivering to those speakers. The meters on our KWA 99 review sample were a long way off displaying power output correctly, showing a 25-watt output when the amplifier was delivering only a single watt of power into an 8-ohm load. The needles pinned at maximum when the output power was just 10 watts into an 8-ohm load.

As for the meters themselves, they

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PWR

are very 'low-tech', with a look and design reminiscent of meters from early in the last century. This was a deliberate design choice by Wright, who posted on Modwright's website that "the amber illuminated power VU meters were chosen for a vintage tone aesthetic that I believe embodies the design concept".

As you can see in the image on the previous page, which shows the meter switched on, this deliberate "vintage tone aesthetic" means that the amber illumination is far brighter at the bottom of the meter than it is at the top; the distribution of light is not uniform across the area of the meter. This disparity remains the case no matter what brightness level you choose, being continuously variable by means of a rotary potentiometer on the rear panel (the maximum anticlockwise position of this control switches the illumination off completely, which we preferred).

Wright also went retro with the design of the rotary dial on the KWA 99's rear panel (pictured on p27). Honestly, we can't remember the last time we saw this type of knob on an electrical component!

Peer closely and you will see that Wright is economising on his chassis inventory by identifying the mains power socket as being 120V/60Hz rather than what it really is here in Australia, which is 230V/50Hz. Peer closer still and you can also see a typographic error in Modwright's company name — "Instruemnts." Oops! We can see why Wright wouldn't want to dump a whole load of pre-screened chassis for a simple spelling mistake that would likely go unnoticed by many owners (unless they've read this review!), but that said, high-quality stickers are not expensive and also could have been used on models destined for 230V/50Hz markets.

You don't have to look closely at the image of the KWA 99's internals (to your right) to see there is an inordinate amount of point-to-point wiring, not

MODWRIGHT HISTORY

Dan Wright originally planned a future in journalism, and to that end spent a year in Australia as an exchange student. On his return to the USA, however, he decided against journalism and instead enrolled in a computer engineering course at Anchorage University in Alaska. He later switched courses and universities to graduate from Fairbanks University with an honours degree in Mechanical Engineering. Taking advantage of his qualifications, Wright began a career as a professional engineer specialising in heating and ventilation systems.

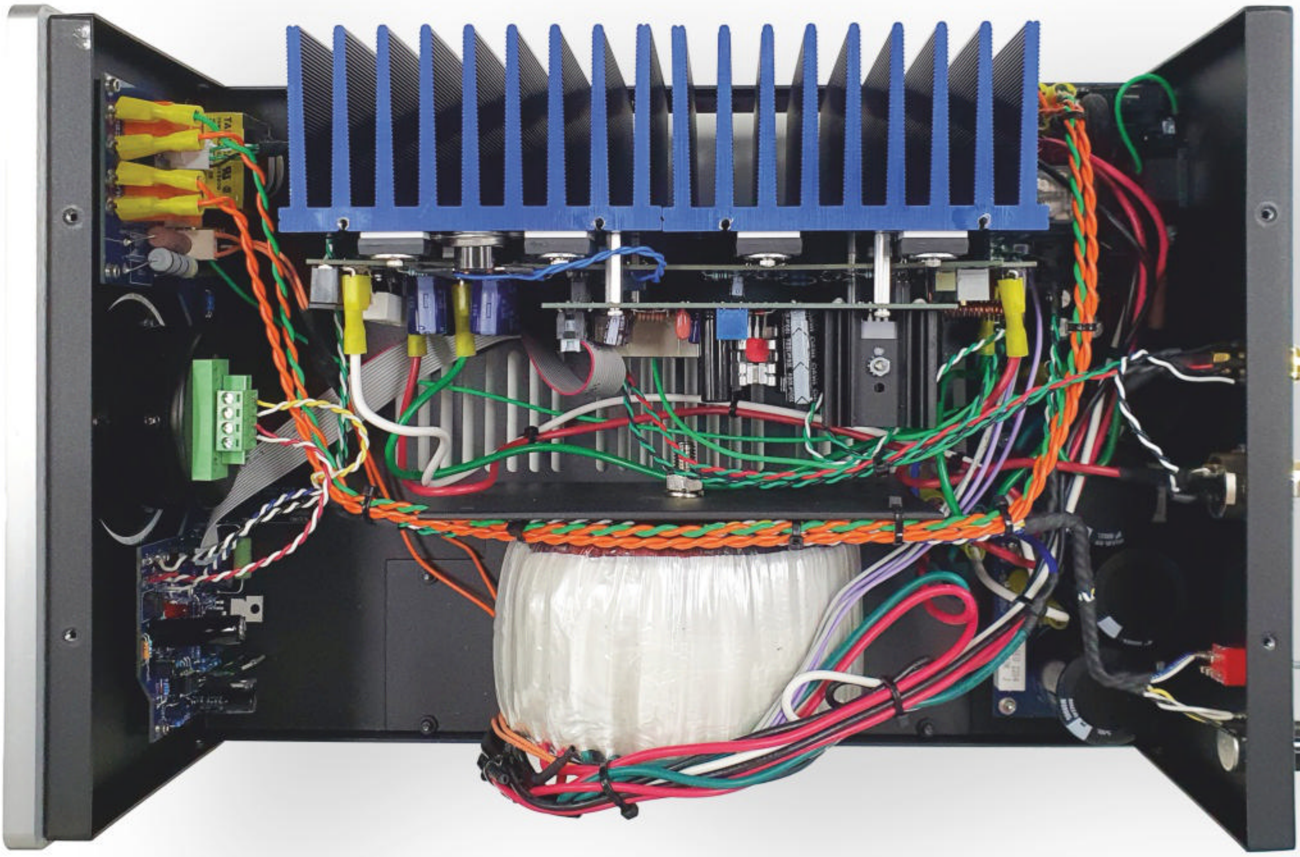
However, having long been interested in designing and building audio equipment, Wright deployed his multiple skills to develop a part-time business improving existing audio products by upgrading various components within them, such as op-amps, resistors and capacitors. He also modified and improved the power supplies inside various other products, hence the company name, 'Mod' Wright.

Despite this side business becoming quite large and relatively profitable, Wright was operating out of his basement. But everything changed for him when Perpetual Technologies (owned by Mark Schifter and Peter Madnick of Audio Alchemy) got wind of the modifications he was making on its P3A DAC and gave him an exclusive licence to perform mods that were not only approved by Perpetual Technologies but also did not invalidate the product warranty. It was this encouragement from Schifter and Madnick, and the boost this licensing arrangement delivered to his business, that convinced Wright he should quit his day job, make Modwright a legal entity and launch it as a full-time business, which indeed he did in 2000.

As well as modifying the P3A DAC, he also offered a valve output stage for the Sony CDP-777ES CD player. It wasn't until three years later, in 2003, that he released his first product, the SWL9.0SE preamplifier (as discussed in this review).

Modwright no longer offers modifications, although it does sell 'house-brand' capacitors, designed by Wright, that he recommends for use in power supply decoupling and the bypassing of electrolytic capacitors, as well as for output coupling capacitors in pre or power amplifier applications.

"The M Series Truth capacitors are made with a proprietary oil-impregnated metalized polypropylene dielectric with pure copper-tinned leads," says Wright. "They offer body, weight and exceptional clarity without the softness or overly warm presentation of other oil or paper in oil capacitors on the market."



least as the components used in the circuitry are distributed across several different printed circuit boards, rather than being contained on one, as is more often the case. The voltage from the large toroidal transformer is smoothed by four 12,000μF/63V storage capacitors, and bear in mind that this means there is a transformer (as well as four capacitors) for each channel.

The KWA 99 circuitry includes DC input and thermal overload protections, as well as short-circuit and over-current protections. Of the latter two circuits, Wright says they are "served by our unique and proprietary Total Silent Protection circuitry which resides outside of the signal path. When protection is triggered, the channel simply mutes. To reset, unplug the power cord wait thirty seconds, re-insert the power cord and power back up." In the event of a thermal overload, meanwhile, the amp simply shuts down without visual indication.

LISTENING SESSIONS

Wright suggests that the best preamplifier pairing for the KWA 99 is his own Modwright LS 99 balanced tube model, but as we didn't have one to hand we used a Halcro Eclipse preamp — a review sample we were loaning; sadly we do not own one — for the great majority of our listening sessions.

At the start of any auditioning session, we usually play music at the maximum volume our domestic arrangements will allow to ensure there is sufficient amplifier power on tap to reproduce musical transients without clipping, and it was immediately apparent that the Modwright mono pair would deliver more than sufficient power for any home hi-fi set-up — even those fronted by inefficient loudspeakers like ours.

The pair proved themselves the ideal amplification to reveal the myriad sonic complexities on the debut album by Mk.gee (whose parents named him Michael Gordon), Two Star & the Dream Police. Listening to *How Many Miles*, we were taken by how atmospheric his vocals sounded against the full-wash background. And on *Rylee & I*, the Modwrights impressed with their ability to deliver the very deepest bass with utmost precision whilst fluidly delivering the extreme highs at the same time. The pulsations of the multiple instruments that flavour *I Want* are perfectly pitched and timed, and here were delivered with a sonic warmth that was highly aurally satisfying. This warmth of sound also imbued album closer *Dream police* with an almost ethereal ambience, as well as demonstrating the advantage of having one dedicated amplifier for each of the channels. Indeed, the totality of the channel separation here eludes most single-chassis stereo amplifiers.

It seemed appropriate to follow up

> “
>
> ... their ability to deliver the very deepest bass with utmost precision whilst fluidly delivering the extreme highs...

KWA 99
Power
Watts
PWR

Mk.gee with an album from another artist who didn't like the name they were born with — Beatrice Laus, who is better known by her professional name, Beabadoobee. Her album This Is How Tomorrow Moves benefits enormously from the production by Rick Rubin, but at the same time it may well be the first album we've come across where the number of technicians involved in producing (16!) it exceeded the number of musicians playing on it (10). Intro track *Take a Bite* sets the sonic tone for the album, with a full and lush soundscape whose tonal richness was again enhanced by the warmth of the Modwright KWA 99's character. The bounce-channel sound effects on *California* again demonstrated the infinite channel separation on offer from this duo, along with a reminder of their impressive bass depth and precision.

The intimacy of the presentation on *Coming Home* reflects the lyric, while the accuracy of the guitar sound is astounding, not least because of the way it contrasts with Beabadoobee's breathy 'little girl' vocals — all attributes that are reprised on the following track, *Ever Seen*.

To evaluate the Modwrights' delivery of a female vocal, we span up one of our favourite albums of the past decade, Hayley Willams' Petals for Armor. Everything about this album is outrageously good — her voice, her lyrics, the musicianship of everyone who contributed, plus a special mention for the album's state-of-the-art production. This is one album you should most definitely purchase in its unadulterated 24-bit/96kHz FLAC livery. It will become not only a favourite for the music itself but also as a test album, to use over and over again to evaluate audio components — it's that good! And if you only know Williams from her previous work fronting pop-punk outfit Paramore, this solo debut of hers will be a revelation.

The album's opener, *Simmer,* is best known for its many obscenities, both real and implied, but it deserves to be most renowned for its beat-perfect drumming (Aaron Steele) and inventive bass lines (Joey Howard). The syncopation of *Leave It Alone* is superb, too — and superbly delivered by the Modwrights — and the sound of the unison guitar strings is as rich and detailed as a medieval tapestry, once again satisfyingly enhanced by the lushness of the KWA 99's presentation. *Cinnamon*, which follows, will afford you the opportunity to hear that the Modwrights are quiet in those 'spaces between the notes'; you will hear no noise from the circuitry, just silence. The same is true of *Dead Horse*, where you can again hear the magnificent bass and some pretty impressive percussion. (The lyric is pretty funny too!)

Also hugely impressive are the vocal deliveries on *Roses/Lotus/Violet/Iris*, a track that adds backing vocals from Phoebe Bridgers, Julien Baker and Lucy Dacus to Williams' own multi-tracked vocals. We were so impressed by how distinctly the Modwrights distinguished between the singers' deliveries.

> “
> The Modwrights are quiet in those 'spaces between the notes'; you will hear no noise from the circuitry

CONCLUSION

All in all, the new KWA 99 power amplifiers are a triumph. They deliver that classic Modwright sound in a smaller and arguably more elegant package than the company's more powerful and modern-looking KWH 225i hybrid integrated amplifier, which sells for only a few hundred dollars more.

SPECIFICATIONS

Modwright KWA 99

Price: $16,250/pair
Warranty: 5 years
Design: Class A/B (high Class A bias)
Power Output: 100W (8ohms); 200W (4 ohms)
Frequency Response: 10Hz–150kHz (–1dB)
Signal-to-noise ratio: 90dB (unweighted)
THD: <0.05%
Input: RCA, XLR
Input Impedance: 47kohms
Gain: 26dB
Dimensions (HWD): 15 x 25 x 38cm (inc footers, binding posts)
Weight: 13.2kg

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THE COMEBACK CONTINUES…

By Becky Roberts

Visitors to the Australian Hi-Fi Show 2025 in Sydney last month were the first fortunate folk in the world to demo Yamaha's two upcoming high-end headphones, which follow the highly acclaimed 'special edition' YH-5000SE that the company released in 2023 in its surprise return to the illustrious head-fi market.

Almost as soon as the $7,499 YH-5000SE open-back over-ears launched, many, including us, wondered whether a more accessible version and a closed-back model would come down the track, and the forthcoming duo are our answer. Set to go on sale this year, they solidify the company's return to the audiophile headphone market and carry the weight of expectation in light of their sibling's unwavering success.

While information on both new pairs, including their prices, remains slim for now, we have been fortunate to spend over a week with one of the models and can divulge some details and early hands-on impressions…

> “
>
> These closed, solid earcups are what we can only describe as ‘orb-like’... each YH-C3000 housing takes over a week to make

THE FAMILIAR

First up we have the open-back YH-4000, which, from what we can gather, closely resemble the YH-5000SE both in terms of aesthetic and engineering; they simply introduce a few material-based changes, we’re told.

The YH-5000SE were originally conceived as ‘Special Edition’ (hence the ‘SE’ in the model name) headphones that would predate the launch of a ‘standard’ version, identical except that it would bundle in fewer accessories. So, presumably, the YH-4000 will transpire as that eventual follow-on, with Yamaha also choosing to make a couple of minor design adjustments now that the headphones have been in the wild for two years.

Which accessories will be carried over remains to be seen — the YH-5000SE came with two cable and earpads designs, plus a headphone stand — as does their price. We would expect the YH-4000’s figure to come in below that of the ‘Special Edition’ pair, but before you start rubbing your hands together, probably not by much. Perhaps we shall be pleasantly surprised…

Considering how well the YH-5000SE were received, it isn’t surprising that the design has largely been kept. They quickly made a legacy for themselves, gaining a highly favourable review in *Australian Hi-Fi* magazine before winning the Temptation Award at its sister publication, *What Hi-Fi?*.

As Yamaha’s first high-end wired headphones in three decades, they very much succeeded as ambitious and modern reimaginings of the company’s very first headphones, the HP-1, from the mid-1970s.

THE FRESH

The most exciting model, for its freshness at least, is the YH-C3000 (‘C’ = closed-back), which we borrowed an early production sample of in the weeks prior to the April hi-fi show.

Naturally, the YH-C3000 look pretty different to the open-back designs, which are aesthetically defined by the intricate spider pattern of the earcups’ open, lightweight magnesium structure. These closed, solid earcups are what we can only describe as ‘orb-like’ — round, glossy and black — and look, in our minds, more traditional and less aesthetically divisive than the rather industrial-looking spider design.

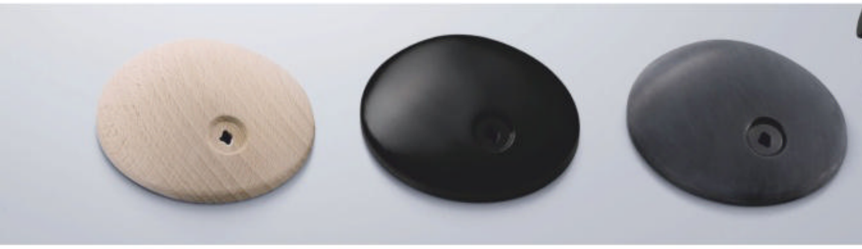
They are made of wood, specifically German Beech. Yamaha has a storied history with wood craft, of course, with its factory in the north of Japan, the Yamaha Music Craft AKITA (YMCA), having manufactured wood for its pianos and various other musical instruments for more than seven decades. Indeed, the YH-C3000 supposedly share manufacturing similarities with the bodywork of Yamaha guitars.

The team settled on beech wood after testing various types, including rosewood, African mahogany and sycamore, and also benefited from the company’s specialist skills in drying wood, again for its pianos.

The ridge of the earcup housing and around the brand’s striking emblem is carved, shaved and sanded by hand, with the finishing process alone — colouring, sanding and polishing — repeated five times to produce the desired effect. It’s little wonder that each YH-C3000 housing takes over a week to make.

A further, less discernible nod to Yamaha’s distinguished musical instrument career: the inner red-ish colour of the silk protein inside the earcups is the same colour you see upon opening a Yamaha piano!

The YH-C3000 feel as lovely as they look, though a word of caressing caution: the finish is, to our mild frustration at least, a fingerprint magnet. Fortunately, Yamaha bundles a wipe cloth into the package, but if you’re an avid Instagram poster, good luck taking photos of them without your phone or concentration face shining back at you in the reflective finish. Of course, this mirror-like glossy black screams ‘Yamaha’, representing many of its iconic creations, from pianos to motorbikes. We read one *Head-Fi* forum user liken the earcups to the headlights of



△ EACH WOODEN EARCUP IS SANDED, COLOURED AND POLISHED FIVE TIMES

THE WHOLE DRIVE UNIT WITH THE HOUSING AROUND THE DIAPHRAGM

THREE COMPOSITE LAYERS ARE COMPRESSED TO FORM A ONE-PIECE DIAPHRAGM

the Yamaha R1 bike — spot on.

Our review's description of the YH-5000SE as feeling "beautifully engineered", "built with obvious care" and "one of the most comfortable pairs of headphones we've worn" is also applicable to the YH-C3000, with their closed earcup construction only adding to the sense of solidity and luxury.

The rest of the physical structure seems mostly similar — the headband, slider and swivel material and function are the same as YH-5000SE — though the 'hanger' is aluminium rather than magnesium this time, while the leather earpads are different too. It's pretty impressive that Yamaha has managed to produce a closed-back design only 10g heavier than the YH-5000SE, at 330g. That compares favourably to established high-end pairs such as the Focal Stellia (435g), Beyerdynamic T5 (350g) and Audio-Technica ATH-AWKT (405g), and is a practical Godsend for those who revel in long listening sessions. Certainly in the couple of hours they donned our heads without removal, they never felt burdensome to wear.

Beneath this beautiful handcrafted construction is where the real magic lies,

WHICH TO BACK: OPEN OR CLOSED?

Open-back headphones don't have an enclosure behind their drivers, which means that sound is fired both towards and away from the listener's ears. Therefore, if you sit next to anyone using a pair, the chances are that you'll have no problem hearing their music, albeit with a thin and tinny tone. You would hear the sound being fired away from the listener's ears and out of the headphone's earcups (which often have holes for that sound to escape through). Similarly, there is little sense of isolation from the environment, and you can hear almost everything around you. Want to enjoy open-back headphones on a bus, train or plane? Good luck. They are certainly the kind of headphones better enjoyed in the quiet privacy of your own home, where noisy distractions are limited.

Closed-back headphones, however, have that enclosure behind the drivers, with the sound that's fired away from your ears hitting the earcup, although many designs attempt to negate the distortion caused by this effect to ensure most of the sound is still focused on hitting your ears. This closed construction naturally prevents excessive sound leakage from your headphones.

Why, then, do many manufacturers still persist in making open-back designs if they're so useless at isolating you from outside noise, rarely offer noise-cancelling capabilities and leak sound like a broken sieve? Well, as you might have guessed, there are some important advantages when it comes to sound quality...

With no enclosure behind the drive unit, rearward-firing sound is free to escape more easily in open-backs. In a closed design, this sonic energy would be trapped and excite resonances in the enclosure, causing unwanted noise. This is sound you don't want, and it overlays that made by the drive unit. The result is a loss of clarity, transparency and resolution. Also, there is a good chance that any sound bouncing around inside that closed enclosure could work its way back out through the drive unit diaphragm and add to its output — again, detrimental to sound quality.

It doesn't end there, either. The inherent springiness in the trapped air behind the driver could restrict the movement of the diaphragm during larger excursions, which would affect the way the headphones render the music's dynamics and limit performance at higher volume levels.

When it comes to pure sound quality, open-back designs hold most of the aces. Open designs are often so much more dynamically expressive and generally emotive than their rivals, with a clearer, more revealing and more expressive sound that will delight anyone who likes to feel the emotion and excitement of their music. They're usually more spacious, too, with a wider sonic canvas that benefits from a pleasing sense of instrumental separation that feels less 'in your own head'.

Comfort can also be helped by an open design. Ears heat up less over extended listening sessions, while the lack of an enclosure offers the potential for reduced weight.

Open-back designs don't hold *all* of the aces when it comes to sound, though. The inclusion of an enclosed design generally adds greater sonic muscularity to the equation, especially in the bass department. They also tend to sound more solid and substantial as a result, with many listeners preferring the muscularity and weight of a closed pair.

Combine that with their portability and ease of use, and it's little wonder that closed-backs are the choice for most people in this increasingly portable world. Ultimately, which design is right for you depends on your sonic preferences and where you plan on using them.

XLR
4.4 BALANCED
STATUS
ENTER
MENU
INPUT
OUTPUT

> “In our notes when listening to Public Service Broadcasting, we’ve simply written ‘bubble of energy’. ‘Fun’ and ‘astute’...

though. Having sown the seed for a new rigid yet lightweight driver with a pre-layered, triple-layer diaphragm back in 2010, Yamaha’s team have now finished the development of that all-new drive unit, which debuts in the YH-C3000.

It’s called the Armodynamic driver, the name taken from ‘Armonia’, which in music vocabulary references harmony after the name of the Greek goddess of harmony, Harmonia. And, 15 years after its initial conception, it did indeed emerge as a triple-layer structure, with the three layers compressed together to form one diaphragm piece using an apparently highly tricky manufacturing technique honed by Yamaha. Specifically, a composite layer of Zylon, paper and resin sandwiches a composite layer of foaming resin, paper and resin.

Plugged first into our Chord Hugo 2 headphone amplifier and then the more price-comparable Yamaha HA-L7A, the YH-C3000 share a similar sonic character to their siblings — one that is utterly clear, straight down the middle tonally, and highly expressive across the board.

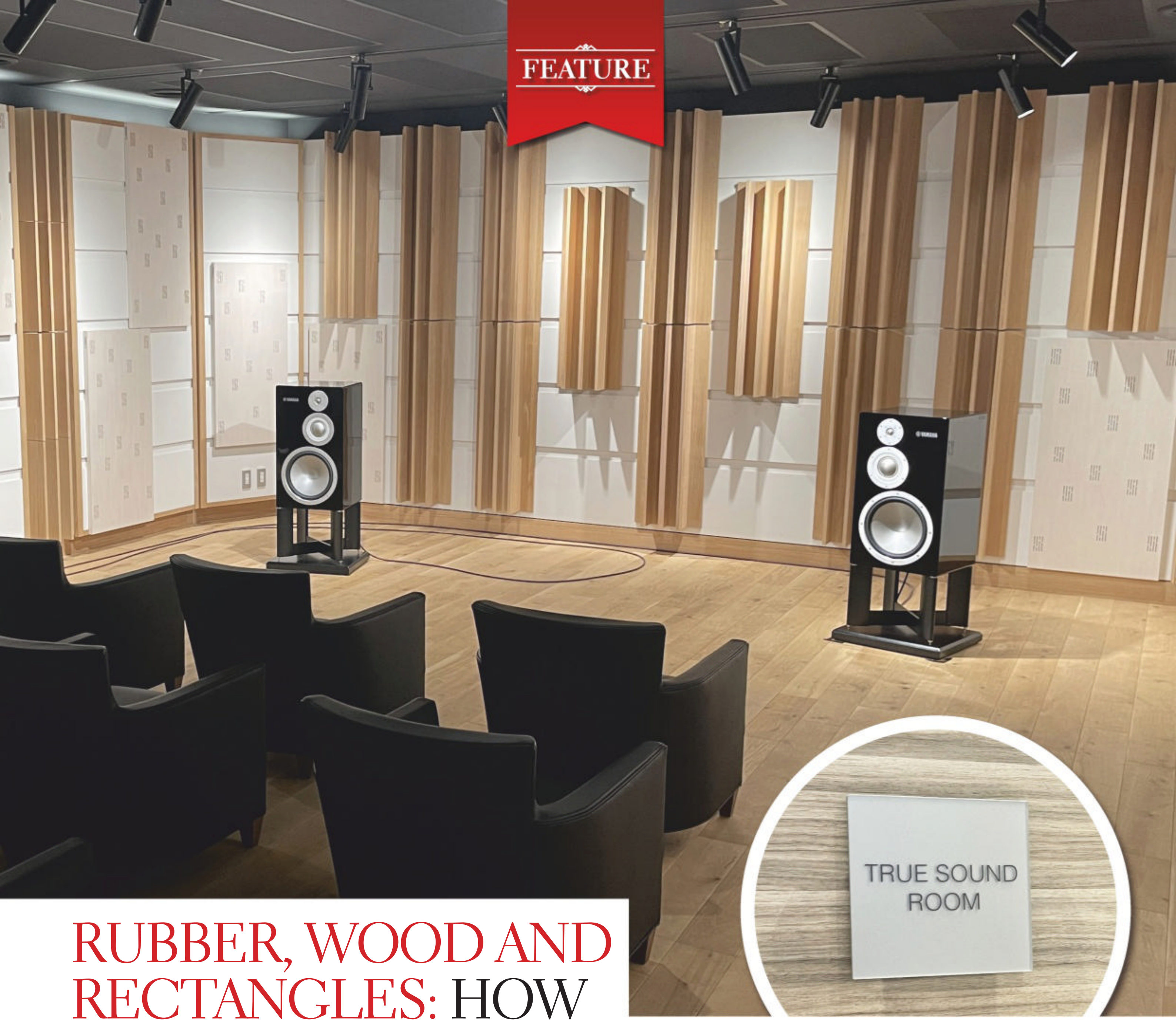
It wasn’t surprising to hear a slightly more closed-in soundstage, just as it wasn’t a shock how much more authoritative they sounded in comparison. That tends to be the sonic nature of closed designs, after all.

We are personally fans of the ‘open-back sound’ (one typically defined by impeccable transparency and dynamic expression), but listening to the YH-C3000 we found it easy to appreciate the value of absolute muscularity and weight. The conviction behind each varied percussive element in Jamie xx’s *It’s So Good*; how effectively the tectonic droning backdrop anchors Oneohtrix Point Never & Iggy Pop’s *The Pure And The Damned*, and the depth of Iggy’s spoken vocals above it; and the drive and defintion behind the bassline that rhythmically underpins The Goon Sax’s *In The Stone*… it’s all utterly captivating, even at lower volumes.

On very few occasions have we heard the piano playing throughout Eluvium’s *Prelude For Time Feelers* (from 2007’s Copia) conveyed with as much dynamic perception, and despite a lesser sense of airiness, nothing sounds like it’s struggling for room or coherency as strings and horns head in various directions to convolute the composition.

In our notes when listening to Public Service Broadcasting, we’ve simply written ‘bubble of energy’. ‘Fun’ and ‘astute’ seem like good adjectives to leave on.

This is by no means a review but simply early impressions based on a pre-production pair. Further listening using a range of partnering kit, compared next to those aforementioned rivals, and of course with a full production model, will paint a more complete picture, as will the release of pricing information. But the YH-C3000 landscape we’ve experienced so far, precisely sketched and insightfully shaded, certainly seems promising. Æ



RUBBER, WOOD AND RECTANGLES: HOW YAMAHA HONED ITS ACE NEW LISTENING ROOM

By Ketan Bharadia

In our experience, the perfect listening room doesn't exist. Yamaha's latest effort, however, is one of the best we have come across in years. It was developed with a scientific approach and then fine-tuned by ear.

This newly developed demo space is located in the confines of the company's impressively large piano manufacturing facility near the central Japanese city of Kakegawa. Here, Yamaha builds most of its flagship 5000 Series products, including the GT-5000 turntable and the high-end headphones discussed in the pages prior.

We are here to tour the manufacturing facility and are surprised to find that the 5000 Series is pretty much handmade. There are no extensive production lines for either the pre/power combination or the rather brutal-looking speakers; instead, there are carefully organised workstations where artisans assemble the various products with utmost care and attention.

DOMESTIC SETTING

Susumu Kumazawa, a Senior Manager in Yamaha's consumer audio department, is our host for the listening session and tells us about the technical intricacies of the room's design. Called the 'True Sound Room', it is nicely sized at 2.8m tall, 5m wide and 8m deep.

These dimensions are not so different to many domestic listening spaces, and reasonable given the bulk, power and price levels of the flagship 5000 Series components housed within it, including the C-5000 preamp ($12,999), M-5000 stereo power amplifier ($12,999) and NS-5000 loudspeakers with stands ($19,999).

It isn't common for bespoke listening rooms to have non-parallel walls in a bid to avoid the generation of standing waves. Yamaha hasn't chosen to do that. Rather, it has stayed with a conventionally rectangular shape, as that is more representative of what customers have.

The resultant well-defined standing waves are then controlled through a combination of reflection and absorption. The company's engineers paid particular attention to the areas of first reflection from the various walls and ceilings to control the room's behaviour. The final adjustments to the exact positioning of the various acoustics treatments were done by ear.

They were also careful not to use too much damping in the room, as that can smother the 'life' in music. The room's RT60 time (the time it takes the sound to decay by 60db from its original level) is quoted as around 0.5 seconds, which is generally considered a good balance for home hi-fi.

The room's walls are covered with Yamaha-developed acoustic panels that are claimed to reflect and absorb the sound across a broad band of frequencies, while the ceiling uses around 30 absorbing panels that help to compensate for the floor being wooden and reflective.

The engineers experimented with adding something absorbing on the floor, like a rug, but it took away stereo image height and an element of liveliness that they wanted to preserve. That floor isn't conventional either, with isolation provided by a layered rubber and plywood construction. Yamaha certainly hasn't done things by halves here.

CARE PAYS OFF

The company is demonstrating to us its range-topping system, with the GT-5000 record player ($12,999) partnered with the now-discontinued MC-1 moving-coil cartridge acting as the source, connected to the aforementioned amplifier combo and speakers. The latter are placed well out into the room.

Our expectations are high, and it is fair to say that they were met. It is hard to make definitive judgments when we are not familiar with any part of the system or the room, so it would be wrong to try and do so. Still, as we listen to Lizz Wright's Grace LP, it is hard not to be impressed by the articulation and transparency of the system before us.

> "They were careful not to use too much damping in the room, as that can smother the 'life' in music

Clarity through the midrange seems exceptional, as does the system's ability to paint an expansive soundstage. There is a lovely sense of depth, and the imaging is stable and convincingly layered.

Jacqueline Du Pré and Daniel Barenboim's Haydn Cello Concerto in C highlights the system's even tonal balance and its ability to reveal intricate low-level instrumental textures. The controlled, well-extended lows have a fine sense of solidity, combined with a pleasant richness. Dynamics are wide-ranging, punchy and fluid. There is plenty of composure when the volume level rises, and the setup seems to be coasting at the generous levels at which we are listening.

We find ourselves wondering if the presentation could be a little richer and sweeter from the midrange upwards and whether it might prove a little unforgiving with less cultured recordings, but only longer listening in a more familiar environment could confirm either way.

Our listening session finishes with an old favourite in the form of Kind of Blue by Miles Davis. Once again, there is no denying the system's resolution or its ability to produce a cohesive and well-integrated sound; it is all so crisp, clean and effortless.

The complete 5000 Series package delivers an entertaining presentation that proves Yamaha's engineering skill, even at this elevated price level, while the excellent listening room naturally plays a hugely positive part in how well it can present itself. Æ

by MUSICAL FIDELITY
SOURCE
MM LOADING
MC LOADING
INPUTS
CARTRIDGE
LOADING
EQUALIZATION
SUBSONIC
GAIN
POWER
STBY

MUSICAL FIDELITY
M8x Vinyl

Reviewer Ian Frazer

PHONO PREAMPLIFIER

If the features of Musical Fidelity's latest phono preamplifier were listed on a restaurant menu, our wife would be horrified. "What do you mean there are no chips?, we can almost hear her saying. We can also imagine Musical Fidelity's genial CEO, Heinz Lichtenegger, rushing over to reassure her that their absence is purely down to the fact that only the *highest* quality dishes will do. In terms of amplification and specifically the M8x Vinyl, this translates to his use of discrete electronic components — individual resistors, transistors, and capacitors — instead of chips.

The chips to which we refer are, of course, integrated circuits (or 'ICs'), tiny monolithic electronic components that can perform multiple functions because encapsulated inside them are multiple resistors, transistors and capacitors. They're called 'chips' (or more precisely, 'microchips') because all these components are etched onto a single small flat piece of semiconductor material, usually silicon.

Lichtenegger believes that discrete components can deliver higher levels of performance than ICs because, generally, ICs have a limited ability to dissipate power (due to their small size) and are prone to damage from high voltages or excessive current flow. It's also not possible for an IC to incorporate large value resistors and capacitors, while, from a user perspective, a circuit consisting of discrete components is easier to repair.

However, Lichtenegger provides another reason for choosing discrete components: "Countless hours of listening tests have shown us that even the very best op-amps [*an op-amp, or operational amplifier, is a specific type of IC that contains six transistors and one or two resistors*] do not tend to be so neutral, natural, dynamic or vivid — all of which are characteristics of the Musical Fidelity sound," he says.

Like many of Musical Fidelity's products these days, the M8x Vinyl phono preamplifier is built entirely in countries within the European Union, a switch in locale initiated when Lichtenegger purchased the company from its founder, Anthony Michaelson, in 2018.

A PLETHORA OF ADJUSTMENTS

The M8x Vinyl is not a totally new design, inheriting many of its circuit design features from the older M6x Vinyl, which continues in Musical Fidelity's product line. The M6x Vinyl was one of the first phono stages in the world with balanced inputs, one of the very few to offer multiple phono inputs, and one of the few using dual-mono circuitry. This trio of traits are also part of the M8x Vinyl's makeup, except that this time Musical Fidelity has gone one step further, ensuring that the circuitry is not only dual mono but also fully balanced, from input to output.

The provision of multiple inputs on a phono stage would generally introduce complications for users. After all, if you have different phono cartridges connected at once, each is likely to require a different load capacitance, load impedance and gain requirement, so every switch would require several additional changes. You do not need to do this with the M8x, though. It 'remembers' the specific capacitance, impedance and gain settings for each input and applies these automatically whenever you switch to it. The M8x also remembers each input's equalisation and subsonic filter settings, so switching from one phono cartridge to another (and potentially from one turntable to another) is really as simple as moving the large rotary dial on the front panel's left-hand side, which cycles through two balanced (XLR1, XLR2) and two unbalanced inputs (RCA1, RCA2). Each can be set for either moving-magnet or moving-coil operation.

Other than for gain selection (between 0dB, +3dB, +6dB and +9dB), which is accomplished using the right-hand-side rotary dial, all other circuit adjustments are made using the five small push-buttons at the bottom of the panel.

That you can make all adjustments using only a handful of buttons and two easily accessible dials is a wonderful achievement; most other phono preamplifiers providing similar adjustments require you to make them by flicking micro-switches inside or at the back of the chassis or — trickier still — by removing and inserting tiny 'U-shaped' jumper connectors on a printed circuit board inside the chassis.

From left to right, the first button selects cartridge type, MM or MC. The second and third respectively select the value of the applied load capacitance (50, 100, 150, 200, 250, 300, 350 or 400pF) in the case of MM cartridges, and the load resistance (5, 10, 25, 50, 100, 400, 800, 1200 or 47,000 ohms) in MC designs.

The next button along selects which of three standard equalisation circuits you'd like to use, depending on the type of LP you're playing. The choices are between RIAA (Record Industry Association of America), Decca (Decca Records) and COL (Columbia Records). Essentially, switching between them allows you to adjust the balance of the bass and treble you're hearing from the LP you are spinning. Only one of the three will be the technically 'correct' balance for any specific LP, but it's just as valid to choose which one you find gives the best balance of sound for your room and ears, not least because the high-frequency response of an LP will diminish after repeated playing. (If you are interested in the specific technical differences between the equalisations, and why they exist in the first place, don't skip the panel below!)

This equalisation can be achieved with either active or passive circuitry (or a combination of both), but the former generally requires the use of ICs, so because Musical Fidelity eschews their use, the M8x Vinyl uses passive RIAA (and Decca and Columbia) equalisation. Passive equalisation uses a complex network of resistors and capacitors in order to provide different levels of attenuation at different frequencies.

The complexity of the circuitry required for passive equalisation is offset by its many advantages, which include no voltage overload, negative feedback, instability issues or high-frequency gain limits. There is, however, one huge disadvantage: the circuit offers no gain at all. In fact, there is an insertion loss, so one or more separate gain stages are required to boost the phono cartridge's voltage up to a level that can drive a preamplifier. This is usually achieved by splitting the passive circuit into LF and HF sections, then

M8x VINYL
MM / MC PHONO STAGE
MUSICAL FIDELITY
INPUTS
XLR 1
XLR 2
RCA 1
RCA 2
GROUND
OUTPUTS
BALANCED
UNBALANCED
CAUTION

PHONO EQUALISATION

The purpose of a phono stage — its *raison d'etre*, if you like — is to 'correct' the frequency response of the signal that the diamond tip of your phono cartridge's stylus extracts from the LP's groove. This comes about because in order to store music on an LP, the cutting engineer has to pre-attenuate the levels of the low frequencies and pre-boost the levels of the high frequencies. At the mid-way point (1kHz), there is no boost or cut. This is the 0dB point. So as the musical sounds being recorded on the LP get progressively lower in frequency, their levels are incrementally reduced until at 20Hz they are 19.3dB lower than those at the 0dB reference at 1kHz.

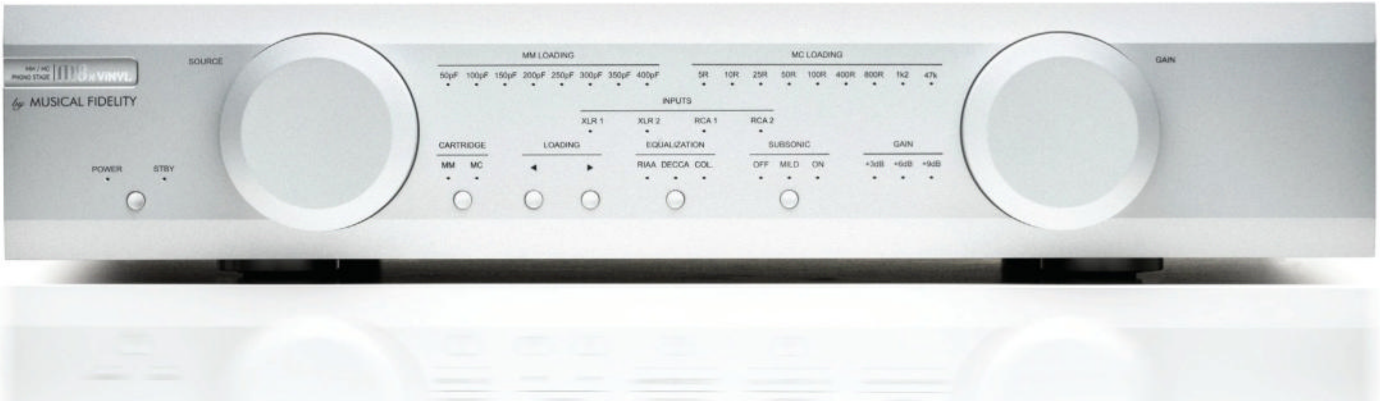
The exact opposite happens with frequencies above 1kHz. The higher the frequency of the music being recorded, the more the audio signal is boosted until, at 20kHz, it is boosted to +19.6dB.

Because these boost and cut levels applied are different for every different frequency, the overall effect is described as an 'equalisation curve', the most common of which is the RIAA curve, so called because it was developed by the Record Industry Association of America. However, prior to the development of the RIAA curve, the various record manufacturers used their own custom equalisation curves, all of which applied different levels of boost and cut. Hence if you were playing an LP recorded by Columbia Records, you'd have to use a Columbia equalisation curve to ensure correct playback. If you were playing an LP recorded by Decca, you'd need to use a Decca equalisation curve, and so on.

In order to ensure that the correct response is sent to your main amplifier and then to your speakers, then, a phono stage must provide an 'inverse' RIAA (or other standard!) curve to restore all the frequencies to their correct levels, for example, boosting the bass at 20Hz by 19.3dB and cutting the treble at 20kHz by 19.6dB in the case of an RIAA curve.

But what happens below 20Hz? If the RIAA equalisation boosts frequencies below 20Hz, this means that unwanted low-frequency sounds from your turntable (drive motor, bearing noise etc) as well as from your LPs (record warp and sounds actually inadvertently recorded at the original recording session) would be made more audible. It is for this very reason that in 1976, Europe's International Electrotechnical Commission (IEC), authorised the RIAA replay curve to be modified in such a way as to reduce (attenuate) frequencies below 20Hz.

This resulted in two different RIAA curves — plain old RIAA, with no attenuation below 20Hz, and IEC-RIAA, with a steep filter to remove frequencies below 20Hz.



inserting three separate gain stages — one before the LF section, one between the two, and one after the HF section. This is exactly the implementation used in the M8x Vinyl, as you can see on the image showing the M8x's circuit topology on the final page of this review. Keen-eyed readers will no doubt spot some 'chips' (ICs) on the printed circuit board, but Musical Fidelity assures us that these are not in the signal path!

You then have a button that lets you insert a subsonic filter into the signal path if you so wish. You have the choice of inserting the standard IEC filter (ON) or one with a rather less severe filter action (MILD). The primary reason for using a filter would be to remove unwanted low-frequency information contained on an LP itself. For example, many recordings made in London's famous Kingsway Hall (in Holborn) inadvertently included rumbling sounds caused by trains travelling on the London Underground's Piccadilly line underneath the venue. This noise was present on so many recordings that it became known as 'Kingsway Rumble'. Another reason would be to remove low-frequency noise introduced by the turntable itself, either from the main bearing or the motor (or both!).

> “
>
> The bass 'n' drums sounded as authentic as we've ever heard them, while Blackmore's guitar screamed exactly as it should

Incidentally, although we have used Musical Fidelity's description of its filter as a 'subsonic' one for the purpose of clarity, it's more technically accurate to describe it as an 'infrasonic' filter. 'Infrasonic' is the correct term to describe sound waves with a frequency below the lower limit of human audibility, generally accepted to be 20Hz. The word 'subsonic' should be reserved to mean 'lower than the speed of sound.'

The final button is the most interesting. While it appears that you can select three different gain settings, there being one LED each for the +3dB, +6dB and +9dB options, there is actually a hidden fourth — 0dB. We have no idea why Musical Fidelity did not provide the extra LED (and extra gain-level identifier) but we found the omission annoying. But maybe it's just us because once you know what's going on, you immediately know that if none of the LEDs is on, the gain is 0dB. Perhaps this was an in-joke on the part of the design team, along the lines of 'zero gain, zero illumination.'

If this is true, it's not technically accurate, as when all the LEDs are off, the gain is not 0dB at all; the M8x Vinyl actually provides 40dB and 60dB of gain respectively for the MM and MC settings. Switching to '+3dB' results in an actual overall gain of 43dB/63dB, and so forth.

It's probably now the right time to point out that whatever gain setting you apply affects the voltage at both the M8x Vinyl's balanced (XLR) and unbalanced (RCA) output terminals, and that both sets of terminals remain on at all times, meaning they can drive two different components simultaneously.

It's highly likely that many readers will find it difficult to equate a specific gain setting with a specific output voltage, or work out how adjusting gain will affect that output voltage, so here are two accessible examples of how it would work in day-to-day use:

1. If your moving-magnet cartridge delivers 5mV to the M8x Vinyl's input terminals, and all three LEDs are off (40dB of gain), you would measure 500mV at the output terminals. If you then pressed the +6dB button, you would measure 1000mV at the output terminals.

2. If your moving-coil cartridge delivers 0.5mV to the M8x Vinyl's input terminals, and all three LEDs are off (60dB of gain), you would still measure 500mV at the output terminals due to the extra 20dB of gain provided by the MC setting. If you then pressed the +6dB button, you would measure 1000mV at the output terminals.

While it is certainly handy to have 3dB, 6dB or even 9dB of additional gain available should it be required (such as to cope with extremely low-output cartridges), you should consider that the more gain you use, the greater the possibility that noise will be introduced, thus the greater the potential for unwanted distortion. Our advice? Try to use as little of the M8x Vinyl's gain as possible… and ideally stick with the 0dB (no LEDs showing) setting.

You should not try to compare the sound of the various gain settings either, because given two otherwise identical sounds, you will always prefer the louder of the two due to a fault in the 'aural circuitry' linking your ear to your brain. It's akin to the trick your eyes play on you if you look at two lines of identical length, one of which has outward arrows at either end, and the other has inward arrows. The latter always appears to be longer than the other one, despite being identical in length. See for yourself below.

LISTENING SESSIONS

As mentioned previously, the left-hand-side dial selects which of the four inputs you'd like to use at any time, enabling you to use up to four turntables, or one or two turntables fitted with multiple tonearms, which is really useful if you want to use one cartridge for non-critical playback situations, and another for special situations (such as transferring new vinyl to a digital format).

If you are switching back and forth between different cartridges, we will also reiterate that the M8x Vinyl is one of the few phono stages with multiple inputs, allowing you to set different loadings for each input, and automatically selecting the correct loading whenever you switch from one to the other. (Another rare example of a phono stage offering this is the M6x Vinyl!)

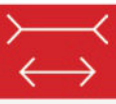
We first listened to Deepest Purple, the 'Best Of' album Deep Purple released in 1980, because its levels are very low, due to Warner (Parlophone) wanting to squeeze 30 minutes of music on each side, making it the longest-playing 'Long Play' record ever released. We chose it to test the M8x Vinyl for the same reason we had chosen it to test the M6x Vinyl: to evaluate the higher-gain settings. Indeed, while the settings were designed to help with low-output phono cartridges, they're also useful when replaying albums with low levels.

We were pleased to hear that despite the increase in volume that resulted from using the 'plus' settings (+3dB, +6dB or +9), we could hear no additional distortion and the overall frequency balance remained constant. The bass 'n' drums sounded as authentic as we've ever heard them, while Blackmore's guitar screamed exactly as it should. We did, however, decide that we didn't need the additional gain of either the +6dB or +9dB settings, but that the +3dB setting (which was not available on the M6x model) worked a real treat. Ian Paice's inventive drumming on *Strange Kind of Woman* was delivered beautifully by the M8x Vinyl, and Jon Lord's electric organ playing on *Child in Time* was equally well handled. On the flip side, *Highway Star* boogied on with the perfect pace and timing we expected to hear. The drum kit sound on *Space Truckin'* was outstandingly good, too.

Next up was The Dark Side of the Moon, another album we played while auditioning the sibling, although we actually always use it when reviewing phono stages and cartridges; it just has so many great testing tracks. This time around, we were not only listening for the deep bass, the clock sounds and the wordless vocal but also switching between the subsonic filter settings. We were rather surprised to discover that, whereas with both the M3x Vinyl and M6x Vinyl we preferred the IEC correction to the RIAA filter (which is the 'ON' setting of the M8x Vinyl's filter), here we preferred the sound quality when the filter was in the 'Mild' setting. However, you must remember that our turntable has no rumble needing to be removed with an IEC-standard filter, and we do not own any LPs containing 'Kingsway Rumble'! Your experience may well be different depending on your turntable and/or the albums you play, in which case we'd recommend using the filter's 'ON' setting.

We confess that we switched between the different equalisation curves fairly often during the auditioning process without coming to any real conclusion about whether we had a specific preference. In the end, it really depended on the album we were playing. As for the effect of the changes, we'll just describe what we heard with one album, to keep it simple. Playing Cleo Laine's Best Friends, we initially believed the RIAA curve

COMPARE THE TWO



OPTICAL AND AURAL ILLUSIONS. JUST AS THE TWO HORIZONTAL LINES IN THIS IMAGE ARE EXACTLY THE SAME LENGTH BUT APPEAR NOT TO BE DUE TO THE DIRECTIONALITY OF THE ARROW-HEADS, THE HUMAN EAR, WHEN PRESENTED WITH TWO SOUNDS THAT ARE IDENTICAL OTHER THAN IN VOLUME, WILL THINK THAT THE LOUDER OF THE TWO 'SOUNDS' BETTER THAN THE OTHER.

Naturally there are both similarities and differences between the M6x Vinyl and M8x Vinyl. Here's a very brief overview.

Appearance: The M8x is bigger and better-looking, with solid aluminium side and top panels (the M6x uses bent alloy), and of course it also has those great-looking control dials, which aren't on the M6x at all.

Gain Settings: The M8x has four levels of MM and MC gain each, whereas the M6x has only two levels of gain for each cartridge type.

Capacitance: Both models offer the same minimum and maximum loads (50pF and 400pF), but the M8x has two more intermediate settings (150pF and 250pF). This is not really a significant difference.

Impedance: The M8x has nine load options, versus only six on the M6x, the additional loads being 5 ohms, 10 ohms and 47kohms. If your phono cartridge requires one of these three extra loads, this is obviously a significant difference, otherwise it is not.

Equalisation: Both models have split passive equalisation with three gain stages, but the M6x has only the RIAA equalisation curve, whereas the M8x adds Columbia and Decca curves.

Low Filter: Both models have subsonic filters, but the M6x has only a single IEC filter, whereas the M8x has both IEC and 'Mild' filters.

Inputs: The M8x has four inputs (two balanced and two unbalanced) against the M6x's three (one balanced, two unbalanced). Only if you need four inputs is this difference significant.

Circuitry: Both models are dual mono, but whereas only the input stage of the M6x is balanced, the M8x is fully balanced from input to output.

Power Supply: The M8x's power supply is three times larger than the M6x's, and its transformer is encapsulated to reduce stray radiation. Both models use super silent toroidal transformers.

MUSICAL FIDELITY
M8x VINYL

provided the best balance, with the sound of John Williams' acoustic guitar perfectly weighted against Laine's voice. When we switched to the Decca curve, Laine's voice was overall a little louder than Williams' guitar, and the imbalance became even more pronounced with the Columbia curve. However, we made that call when listening to the opener, *Feelings*. A few tracks in, by the time we got to *Before Love When Out of Style*, we had decided that perhaps we were wrong, and the guitar was just a little too far forward with the RIAA curve.

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>
> If you use a high-quality phono cartridge, it is absolutely essential to also use a high-quality, dedicated, external phono stage

Once we had the balance to our satisfaction, we could start the LP all over again and luxuriate in the glorious sound quality afforded by the M8x Vinyl. The LP is beautifully recorded, with silent backgrounds and a warm, enveloping acoustic that complements Laine's exceptional voice.

CONCLUSION

At the risk of sounding like a broken record (because we've said it so many times in the past), we feel obliged to say that if you use a high-quality phono cartridge, it is absolutely essential to also use a high-quality, dedicated, external phono stage, otherwise you won't hear that cartridge perform at its best. Integrated phono stages are simply not good enough, even those in the very best high-end preamplifiers and integreds — particularly for use with MC cartridges.

As it happens, we have now had the opportunity to audition three of the four phono stages made by Musical Fidelity — the M3xVinyl, the M6x Vinyl and now the M8x Vinyl — and our opinion is that all three are superb.

Although we thought the M6x sounded even better than the M3x when we reviewed it, if we had only the one turntable and didn't swap phono cartridges in and out, we would have been perfectly happy with the M3x. If we owned multiple turntables and/or regularly swapped phono cartridges, the M6x would be our phono stage of choice.

Now that Musical Fidelity has stirred the pot by introducing the M8x, which sounds even better than the M6x and also offers loads more features and flexibility in addition to the improved performance (not to mention looking by far the best of the three), we find ourselves in a real quandary not only as to which one we would choose to own but also as to which one to recommend. Damn you, Mr Lichtenegger!

SPECIFICATIONS

Musical Fidelity M8x Vinyl

Price: $7,200
Warranty: 5 years
Inputs: 2 x RCA, 2 x balanced XLR
Outputs: RCA, balanced XLR
EQ curve: Split-passive RIAA, Decca, Columbia optimisation

MM:
Gain XLR outputs: 40dB, 43dB, 46dB, 49dB
Frequency response: ±0.2dB
Input impedance: 47kohm
Input capacitance: 50-400pF selectable
THD at 1 kHz: <0.005%
Signal-to-noise ratio: >102dB A-weighted at 40dB

MC:
Gain XLR outputs: 60dB, 63dB, 66dB, 69dB
Frequency response: ±0.2dB
Input impedance: 5 ohm to 47kohm selectable
Input capacitance: 400pF fixed
THD at 1 kHz: <0.008%
Signal-to-noise ratio: >90dB A-weighted at 60dB

Dimensions: 10.2 x 48.3 x 38.1cm
Weight: 10.6kg

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REVIEW

SUGDEN AUDIO

MASTERCLASS LA-4 & SPA-4

Reviewer Stephen Dawson

PREAMPLIFIER & POWER AMPLIFIER

VOLUME
STANDBY
RECORD
B
T
SUGDEN
MASTERCLASS LA 4
CLASS A POWER AMPLIFIER
MADE IN ENGLAND
SUGDEN
MASTERCLASS

If you were a music lover living in the mid-1960s who wanted the very best-sounding amplifier, as well as the convenience of the then-new solid-state designs, you faced an unfortunate problem. Those solid-state (transistor) amplifiers tended to produce a nasty, fairly audible distortion due to many using a Class B configuration. Here, one transistor handles the positive side of the signal, another the negative, and the output of the two is stitched together. Even the very slightest misalignment produces distortion — and there is always some misalignment. This is called crossover distortion.

Two solutions emerged during the latter part of the decade that are still with us today. One was Class A/B, where a DC bias was applied to the output to push the signal towards either the positive or the negative. For most of the time, the amplitude of the waveform would therefore be low enough to avoid hitting the crossover point, thus avoiding crossover distortion. This solution principally appeared first in Japanese hi-fi products, but soon became the most common technology used in power amplifiers, and remains so to this day.

The other solution was Class A, where a much higher bias was applied so that the entire waveform was handled by one transistor without ever trespassing onto that problematic crossover zone. As far as analogue power amplifiers go, Class A remains the gold standard.

So why this little technological history lesson? Well, it seems that the first ever commercial full Class A amplifier was the Sugden Audio A21, released by founder James Edward Sugden in 1968.

Indeed, we must confess to feeling privileged to take custody, albeit for just a fortnight, of Sugden's LA-4 preamplifier and SPA-4 Class A power amplifier. After all, not many modern products have a direct connection to an important part of hi-fi history.

SPA-4 POWER AMP

The LA-4 and SPA-4 sit within the British company's Masterclass range, which might equally have been called the 'no-compromise' range, or at least the less compelling 'minimally compromised' range. (Every piece of audio equipment ever made has some compromise in order to conform to real life.)

That compromise is indeed very minimal with the SPA-4. Physically, it's a monster, standing 25cm tall and weighing over 20kg while adopting the typical component width.

The two available panel finishes are 'graphite' and 'titanium', the latter of which adorned my review sample. Before the duo arrived, we figured that titanium was a nice descriptive term for good old-fashioned brushed aluminium, but not so in this case. We're unsure whether titanium is actually used in the front panels, but the metallic finish is neither brushed nor precisely the hue of aluminium. It's a little darker, richer and certainly more visually pleasing.

Down the full length of both sides of the chassis are vertical heatsink fins, aided by additional ventilation slots in the top panel. They're all necessary. You see, for all its sonic promise, Class A is very inefficient because the output transistors are in a continuous state of operation, even when nothing is happening. That produces heat, which must be dissipated by heatsinks.

Even when the SPA-4 was idling (receiving no signal), we couldn't keep our hands on the heatsinks for more than a second or two. Our power meter indicated a draw of around 215 watts. For comparison, our own 125/250-watt (8/4-ohm) Class A/B power amplifier, which boasts five watts of Class A bias, draws around 20 watts while idling. We note this in case you have a hangup about energy usage. We don't.

> “
>
> The first ever commercial full Class A amplifier was the Sugden Audio A21, released by founder J E Sugden in 1968

The Sugden SPA-4's output is rated at 50 watts into 8 ohms with both channels working, and 75 watts into 4 ohms under the same conditions.

The power amplifier can be fed by either RCA or balanced XLR. Two push-button switches on the back panel allow

BALANCED INPUT
RIGHT
LEFT
INPUT 1
INPUT 2
INPUT 3
INPUT 4
TAPE INPUT
BYPASS INPUT
TAPE OUTPUT
PRE-OUTPUTS
1 PHONO 2
RIGHT BALANCED LEFT
POWER
MAINS POWER INLET AND FUSE
LA-4 Line Pre-amplifier Hand Made in ENGLAND
INPUT
PHONO
BALANCED
MASTERCLASS
CLASS A POWER AMPLIFIER
MANUFACTURED IN ENGLAND
BY J E SUGDEN & CO LIMITED
STATION LANE HECKMONDWIKE
220-240V 50/60Hz 500W
LOUDSPEAKER OUTPUT
RIGHT
LEFT
MAINS INLET AND FUSE

> We like having plenty of turn left in the volume knob, and the LA-4 definitely provides that... it can deliver 20dB of gain

you to switch between these. It wasn't clear from the manual or on-unit labelling which selection was 'in' or 'out', but the former position turned out to be the balanced input.

We opted for balanced, principally so that cable changes within our existing system would be minimal while we tested the Sugdens. Our XLR cables are all Mogami Gold, which, in the audiophile scheme of things, are not particularly expensive. But since these kinds of cables are used in making recordings, well...

We've reviewed many amplifiers over a couple of decades, but we don't recall previously seeing the binding posts used on the SPA-4. They are solid metal, gold-plated, with plenty of options for your choice of speaker cable terminations. Winding back the larger sections of the terminals revealed a nice slot through which to push the lugs so that the prongs surrounded the centre pillar. The terminal diameter was such that we could achieve a very tight grip with finger strength alone. These speaker connections are about as good as such things can get.

LA-4 PREAMPLIFIER

The LA-4 preamplifier is entirely analogue — no digital inputs here. Neither is there an integrated phono stage. Sugden presumably believes, correctly in our view, that enthusiasts buying at this level will want to add an outboard phono stage and/or DAC.

The front panel has four controls: a rotary knob each for volume and input selection, and a push-button each for power and record out.

Wait, *what?* Record out? While it doesn't look like a throwback, the LA-4 does indeed embody some of the 1970s hi-fi ethos. That button is for the tape loop. Perhaps it's not even a throwback, so much as an anticipation of the return of the cassette tape, or perhaps the reel-to-reel. A set of RCA outputs provides a record signal to whatever recording device you plug in there. These are connected, when the front-panel switch is set to 'on', to whatever input is currently selected. The level is not altered; you'll need to use the recording device's control.

In addition to the tape inputs are four additional sets of line-level RCA inputs and one pair of balanced XLR inputs. There's also a 'bypass' input which, when the unit is in standby mode, connects directly to the outputs. Interestingly, despite this input using regular RCA connectors, it provides output via both the RCA and balanced XLR outputs. Use this with extreme caution: don't accidentally plug your cassette deck into the adjacent bypass sockets. The input signal is transferred to the output with no attenuation. You could easily blow up your speakers or do other damage.

Admittedly, we would have loved a second set of XLR inputs. Our own system employs one pair of RCA inputs and two pairs of balanced XLR inputs. One of the XLRs is from either our streamer DAC or another DAC into which a streamer (and several other digital devices) are plugged, while the other XLR is used for the phono stage for my primary turntable. (The preamp is a SimAudio Moon 3100, fed by a Thorens TD 1600 running a Goldring Ethos moving-coil cartridge. The only phono input we normally use on our usual preamplifier is from our secondary turntable — a Technics SL-1500C with an Audio-Technica AT-VM95E moving-magnet cartridge. We use its own built-in phono amp. When we're exploring second-hand vinyl purchases, we don't want to drag the Goldring's rather expensive stylus through unknown, often rough, terrain!)

The volume level itself was another interesting throwback. Back in the vinyl-only days, your volume control would rarely need to move clockwise past 12 o'clock for a most fulfilling level. And when CDs appeared with their relatively hot two-volt outputs, 10 o'clock was typically the max. With more recent gear, especially higher-end stuff, volume control often needs to be turned to at least 12 o'clock. Perhaps it's just old habits, but we like having plenty of turn left in the volume knob, and the LA-4 definitely provides that because it can deliver 20dB of gain — none of this mere 1:1 stuff here. You can therefore expect the volume control to rarely stray beyond 11 o'clock. If you have a low-level source, you can turn it up to satisfying levels.

The remote control was... interesting. It's barely mentioned in the LA-4's very slim manual, and its six buttons control only two functions: three increase the volume, three lower it. Perhaps there is some difference between the jumps each invokes, but as far as we could tell they

CLASS A POWER AMPLIFIER
MADE IN ENGLAND
SUGDEN
MASTERCLASS

CLASS A POWER AMPLIFIER
MADE IN ENGLAND
SUGDEN
MASTERCLASS

all operated at about the same speed. Initially, we thought the lack of an input selection control on the remote would prove a hindrance, but in practice we usually had to get up anyway to pop in a CD or whatever when we wanted to change source.

The manual for the power amplifier, also skimpy, makes no recommendation about leaving the amplifier on all the time or switching it off when not in use. In part, your decision will likely be affected by the considerable amount of heat it pumps out into the room. If you do want to switch it off (and then on again), you'll have to press the large power button on the front panel. There is no trigger output on either component.

LISTENING SESSIONS

We used the aforementioned Thorens/Goldring combination for vinyl playback, while all of our listening went through Dynaudio's Contour 20i speakers. As their nominal impedance is four ohms, the nominal power delivered to them by the SPA-4 amplifier was as much as 75 watts.

When conducting these reviews, we're no less immune than anyone else to the charms of spinning the highest of high-fidelity discs, both vinyl and optical, from our collection — especially when using equipment as high-end as this Sugden duo. But we mostly try to stick to the more pedestrian recordings. So we spun up Billy Joel's 1986 record The Bridge, which we would have bought in that very year. It isn't a half-speed master, just a standard lightweight pressing, but it was one of those lucky purchases in which our copy was seemingly produced early in the pressing run, and so is clean and free of all but the lowest noise level.

This is a Phil Ramone production (good!), but as it was produced smack bang in the 1980s (not so good!) it's delivered in a slightly bright and quite pushy style. Nonetheless, as delivered by the Sugden units, there was still air to be had and to be heard. In particular, the tone of the drums on *Code of Silence* on Side Two was entrancing, their full-bodied roundness delivering a true sense of presence. Timing was immaculate, and on several of the tracks the bass guitar was grindingly engaging.

Changing genres and time but sticking with vinyl, we moved to Skeleton Tree by Nick Cave and the Bad Seeds, our pressing of this 2016 album immaculate. The thickly layered instruments and synths of *Jesus Alone* were fused into a whole of musicality, while leaving every element available for close inspection whenever we wanted to focus. As with Billy Joel's drum, through the Sugden duo there was tangible wholeness to the various instruments, a kind of 'reach out and touch it' feeling.

And the bass — the grinding, haunting bass on several of the tracks — was simply as good as it gets: controlled, clean and perfectly balanced.

Even older than the Billy Joel record, but definitely more of an audiophile recording, was one we bought in the early 80s, having heard it at a hi-fi show — the 1981 album from Pat Metheny (guitars etc) and Lyle Mays (keyboards), As Falls Wichita, So Falls Wichita Falls. Unbidden, a smile came to our face the moment the first bass guitar string was plucked.

Midway through the title track, which occupies the whole first side, Nana Vasconcelos delivers an astonishing, multi-layered percussion solo. The Sugden amplifier exercised absolute control over the Dynaudio speakers, with perfect articulation of each strike on the drumskin sufficient to reveal — to someone more

knowledgeable than us — where on the surface the strike took place. Even we could appreciate each strike as subtly different to the others. As the climax is reached near the end of the side, the tambourine-like overlay remained clear as the guitar, bass and synth swelled.

One of our most recent purchases is a pristine 1980s Chesky vinyl reissue of the 1959 RCA recording of Respighi's Pines of Rome and Fountains of Rome, performed by the Chicago Symphony Orchestra and conducted by Fritz Reiner. While some classical labels used heavily multi-miked techniques even then, the RCA 'Living Stereo' classical recordings from that period used three microphones (condenser or, possibly, ribbon) direct to magnetic three-track. The writeup on the Chesky record cover explains that for this version, the three tracks were mixed to two in a tube preamplifier and fed, all in one process, to the cutting lathe — no mixing console, no EQ.

We aren't going to repeat all we've said above about the Sugdens' superb delivery. As it was for those tracks it was also for this, the most analogue possible of renditions. Take it as read that everything was there.

But one thing we really wanted to do was push the amplifier. As we mentioned, our regular power amp is a Class A/B unit rated at 250 watts into 4 ohms, matching the nominal impedance of the Dynaudio speakers. Again, the SPA-4 is rated at 75 watts into 4 ohms, and with a rated sensitivity of 86dB, which is about 3dB less than the average hi-fi loudspeaker, meaning that, on paper, you need double the power to achieve the same volume. Could the Sugden cope with that?

The last track on Side One, *The Pines of the Appian Way*, builds to a massive climax from the 117-piece orchestra. It's said that 1,500 pressings on its first release had to be recalled because of "overmodulation". So we wound up the preamplifier as this track approached and paid very close attention. The Sugden power amplifier proved perfectly happy to deliver that climax at a thunderous level. It sounded, if anything, relaxed — unstressed in the endeavour. Even while thundering away, the elements of the orchestra were easily identifiable, clean and clear.

We repeated the loud listening with several hard-rocking tracks, delivered by the DAC from our CD transport, and by the same DAC from Tidal via a connected music streamer. Not once did we find any sense of limitation. Maybe if you have a massive listening room, you should consider more efficient speakers, but honestly we'd be surprised if anyone found the power insufficient.

CONCLUSION

Much of the hi-fi world is now highly corporatised, with a fair few famous brands of the past not quite badge-engineered but at least sharing technology with corporate stablemates, their products often manufactured at low-cost, foreign facilities. But J E Sugden & Co Ltd remains in England, building its products by hand, and at prices that are often surprisingly affordable by the standards of high-end audio.

That's the case here. Both the LA-4 preamplifier and the SPA-4 power amplifier are gorgeously finished, clearly well-built, and absolutely magnificent performers. It was our pleasure to spend time with them.

SPECIFICATIONS

SUDGEN LA-4

Price: $7,495
Warranty: 2 years
Inputs: 5 x RCA, 1 x balanced XLR, 1 x stereo bypass input (RCA)
Outputs: 2 x RCA, 1 x balanced XLR, 1 x tape output
Frequency response: 15Hz-30kHz +/-0.1dB
Dimensions (HWD): 9 x 43 x 33.5cm
Weight: 6.3kg

SUDGEN SPA-4

Price: $12,495
Warranty: 2 years
Inputs: 1 x RCA, 1 x balanced XLR
Outputs: 4 x binding posts
Power output: 2 x 50 watts (8 ohms); 2 x 75 watts (4 ohms)
Frequency response: 15Hz-3kHz +/-0dB
Bandwidth: 2Hz-200kHz +/- 3dB
Dimensions (HWD): 25 x 43 x 36cm
Weight: 20.15kg

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VITUS AUDIO
SD-025 MK.II

Reviewer Greg Borrowman

STREAMING DAC

INPUT
MENU
STANDBY

Take a long, hard look at Vitus Audio's SD-025 Mk.II streaming DAC and you would be hard-pressed to differentiate it from many other of the Danish brand's products. The company's founder and head designer, Hans Ole Vitus, uses exactly the same chassis for many of his models, which not only ensures visual continuity for those wanting to, say, use an SD-025 Mk.II with one of his amplifiers but also makes the chassis less expensive to produce as he can order them in greater quantities. Indeed, when a chassis costs as much to build as the one Vitus uses, we're talking about a not-inconsiderable saving.

When the very large and heavy (31kg!) carton containing our review sample arrived, we initially thought someone had made a mistake and sent us one of Vitus Audio's power amplifiers instead. The SD-025 Mk.II's power supply must be massive because it took two of us to safely extricate the DAC from its packaging and position it on our equipment rack.

The SD-025 apparently earns its 'Mk.II' status by incorporating a new streamer board that supports gigabit network streaming, but it isn't the only thing that's new: Vitus says that everything in the unit has been redesigned around the new board. You can choose any UPnP streaming software to play from whatever and wherever you like, or use one of the hardwire options if you, like us, prefer to source your audio locally.

MYSTERY MANUAL

As with most Vitus Audio products, six push-buttons adorn the front panel, arranged vertically, with three on either side of the display. The buttons

SD-025
SELECT
VA
MUTE

> “The SD-025 Mk.II supports Mconnect, UPNP/DLNA, Tidal and Spotify Connect, V-Tuner and Qobuz, amongst others

to the display's left are 'Input', 'Menu' and 'Standby'. You can switch between USB, optical, AES/EBU and S/PDIF inputs, plus Ethernet and wi-fi. (Wi-fi connectivity is provided by plugging the supplied 'Dual Band USB Adaptor AC1300Mbps' dongle into the USB-A socket on the rear panel. We think this dongle approach is far superior to having wi-fi built-in because if a repair or upgrade becomes necessary, it can easily be done by the user simply replacing the dongle rather than having to take a trip to a service centre.)

These buttons also select which of the two analogue outputs you wish to use — XLR for a balanced output voltage, or RCA for an unbalanced one. You also have AES/EBU and S/PDIF digital outputs, but we couldn't figure out how to select these because no manual is supplied with the SD-025 Mk.II — or if there is, we couldn't find it.

You see, like many manufacturers these days, Vitus Audio provides consumer information on a USB stick (in the case of the SD-025 Mk.II, it is a very handsome stick!) However, upon browsing the stick (the root directory is titled 'User Manuals and Brochures'), we discovered that it's a bulk repository for all Vitus Audio's consumer information, with directories for the Masterpiece, Reference and Signature Series components, plus one containing all the USB drivers required across the three series. Opening the 'Signature' subdirectory revealed deeper subdirectories for 19 different Signature Series models, but not one for the SD-025 Mk.II. There was indeed a subdirectory titled 'SD-025', but it did not contain a manual, just two files titled 'SD-Remote explanation.pdf' and 'SD-025 Streamer Guide.pdf'.

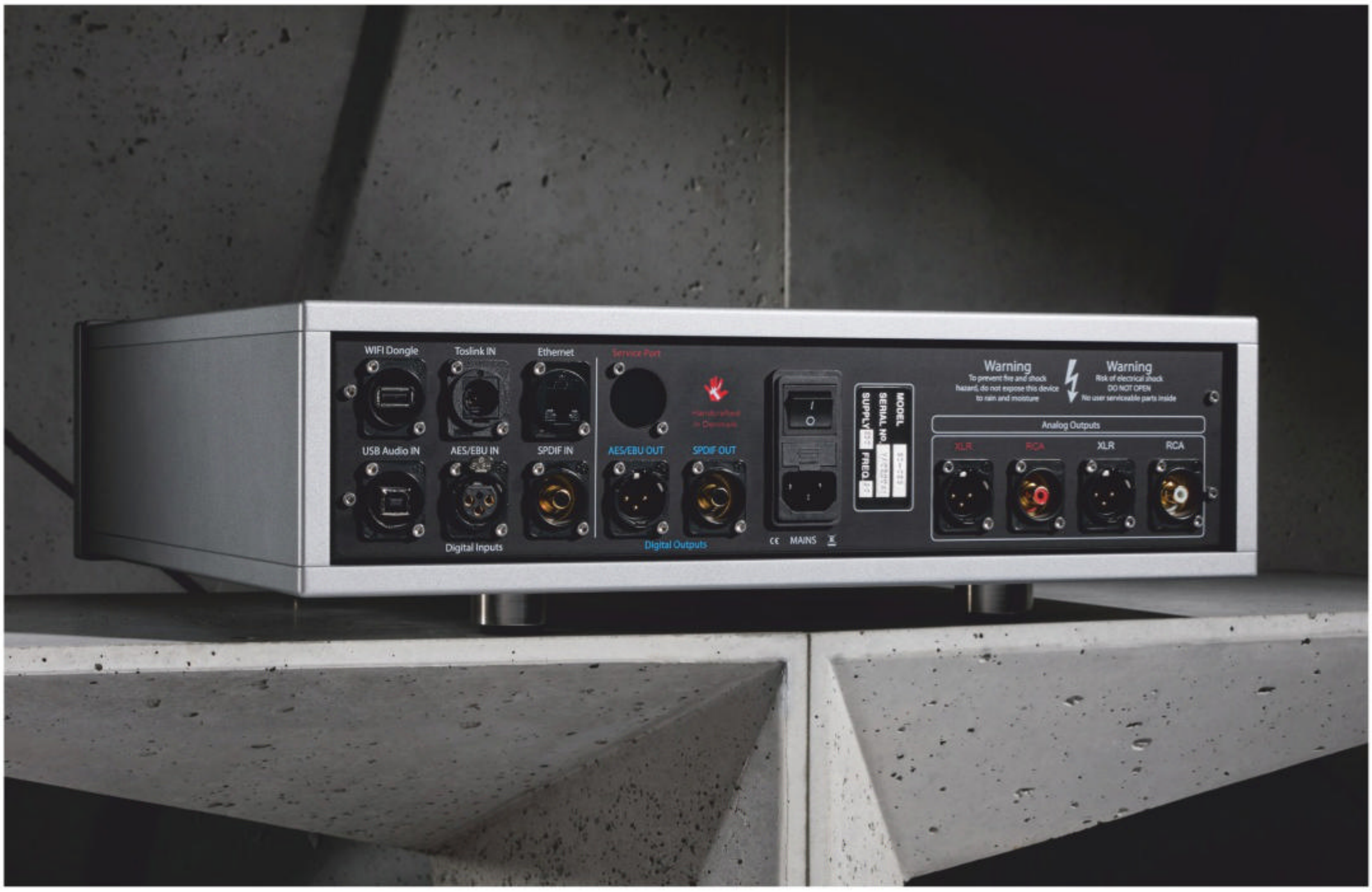
Although we worked out most of the Menu functions intuitively, exiting the menu using the front-panel controls wasn't easy. When the menu screen reads 'Exit' (with an accompanying arrow presumably pointing in the direction you should go), none of the three buttons seemed to complete the process. This information is, presumably, in the missing manual! (We didn't ask Vitus Audio to supply one because we shouldn't have to: it's not as if the SD-025Mk.II is a new product, having been released at the 2023 High End Munich hi-fi show.)

The buttons on the right of the display are 'Volume Up', 'Volume Down' and 'Mute'. The maximum volume is shown as '0.00dB', the minimum as '–60.0dB'. Adjustment between these two extremes occurs in 0.5dB increments.

A fairly bright 'VA' logo at the bottom of the front panel illuminates all the time, even when the unit is in standby mode. And the display colour is a rather nice orange (on a black background). We didn't much like the display's old-fashioned dot-matrix design, though, not least as very tiny dots create the matrix. It's also not very bright, making it quite difficult to read for those with imperfect eyesight. It appears the brightness is adjustable via Vitus Audio's optional remote control, but one was not supplied with our review sample. Brightness may even be adjustable using the front-panel controls, but without a manual we just couldn't be sure. From the information on the USB stick, it appears that this remote is an OEM design, and only some of its controls can control SD-025 Mk.II functions, including volume, mute, input selection, power on/standby and display brightness.

The digital inputs can accommodate digital data across a wide gamut of formats, courtesy of a pair of 1955 multi-bit delta-sigma DACs made by Analog Devices in combination with an Engineered Q8 sample rate converter — we're talking USB-Type B up to 384kHz plus DSD128; AES/EBU up to 192kHz; S/PDIF up to 192kHz; optical up to 96kHz; and Ethernet up to 192kHz plus DSD64. The digital outputs, meanwhile, are fixed at 24-bit/192kHz.

The SD-025 Mk.II supports Mconnect, UPNP/DLNA, Tidal Connect, Spotify Connect, V-Tuner and Qobuz, amongst others. It is now also certified as a Roon Ready endpoint, although Roon is not built in — you still need a separate Roon Core to manage your music collection and stream audio to the streaming DAC.



Your Vitus Audio retailer will be able to help with the specifics.

We would call the SD-025 Mk.II a 'take it or leave it' type of DAC because nothing at all is adjustable — you can't switch between different digital filters, adjust oversampling rates, invert phase, and so on. Basically, what you see is what you get. Although we don't usually fiddle too much (if at all!) with such variables available on a DAC, we rather like having the option to do so.

As we love handwritten inventory cards and warranty forms, we were naturally enamoured with the ones supplied with our review sample, which were hand-penned by one Britta Mogensen, who assured me that everything was A-OK with the product and that all the accessories required had been included with it. (Hey Britta, what about a manual?!)

Vitus Audio's written warranty has some interesting provisions, such as that the initial two-year purchase warranty (only valid if you purchase from an 'Authorised Partner') can be extended to six years by registering your purchase with Vitus Audio within 30 days, and that should you sell your SD-025 MkII, any period of time remaining on the warranty can be transferred to a new owner, providing the sale is arranged via an Authorised Partner.

We aren't sure how this would play out under Australian Consumer Law, which states that it isn't necessary to register an extended warranty in order to qualify for coverage, and doesn't mention second owners at all. But it's probably all moot anyway: because of the way in which Vitus Audio builds its components, you are unlikely to ever make use of the SD-025 Mk.II's warranty.

Although our review sample was finished in silver (described as 'Warm Silver' by Vitus Audio), the streaming DAC is also available in two other 'Standard' colours — 'Pure White' and 'Jet Black' — while 'Unique' finishes such as 'Titanium Orange', 'Dark Champagne' and 'Titanium Grey' (pictured overpage) can be specially ordered. Your dealer can explain the other available unique finishes, plus the application lead times and pricing.

LISTENING SESSIONS

Though the front-panel display and absence of a manual were sources of mild frustration, all that was immediately forgiven once we started listening. The Vitus Audio's sound quality was clearly superior in every respect. It was immediately obvious from the get-go that we would have to dip deeply into our bucket of superlatives to aptly describe its performance here.

If you want to be super impressed by the SD-025 Mk.II's bass delivery, spin up Lady Gaga's latest album, Mayhem, from the very beginning. Opener *Disease* is just wonderful — for not only the bass from a real bass guitar but also the bass delivered from the synthesisers, synth pads and even the drum machine.

But that is just a teaser for track two, which was peeled off as a hit single — the incredible and appropriately named *Abracadabra*. Ms Germanotta has really pulled one out of the hat with this pop masterpiece, a song so strong it forces listeners onto the dancefloor. The beat is hypnotic and the chorus is sing-along perfection. It also highlights Lady Gaga's astonishing vocal range and her ability to inflect the tonality of her lyrics. The drumming (including real drums, as well as a machine) is machine-gunlike in its impact. All this detail is revealed with total accuracy by the SD-025 Mk.II.

The following tracks don't reach the same heights, but don't bail before you've heard the closer, *Die With A Smile*, her

collaboration with Bruno Mars, to admire not only his terrific tenor voice but also her pianism and, once again, vocal. The synergy of the duet is enchanting.

To hear how the Vitus Audio delivered sonic complexity, we turned to British Bahraini trumpeter Yazz Ahmed's fourth (and newest) album, A Paradise in the Hold. The music is essentially jazz improvisation inspired by her Arabic heritage in which quarter-tone scales play a significant part. Amongst the many sonic highlights are the sound of George Crowley's bass clarinet and Ralph Wyld's vibraphone, but the polyrhythms that infect almost all the tracks are like earworms to the soul… you can't *not* listen to the music. This is some of the most outrageously difficult music we have ever been privileged to hear, and the SD-025 Mk.II's delivery was as pitch-perfect and rhythmically accurate as the musicians themselves. The title track is probably the go-to, but *Her Light* and *Into the Night* are unmissable, as is opener *She Stands on the Shore*. Note also that hand-claps are incredibly revealing of sound quality that's true to life, and you will hear plenty of these on *Paradise*.

> “
> The most outrageously difficult music... the delivery was as pitch-perfect and rhythmically accurate as the musicians

To check high-frequency delivery and also to reprise female vocals, it was time for an album that to some might seem a strange choice, Arcadia from Alison Krauss and Union Station. Not strange so far as the female vocal is concerned, because Krauss has a gorgeous voice, but if you're wondering about high frequencies, just listen to the sound of the dobro, fiddle, lap steel and mandolin on this new album, all of which are beautifully recorded. The acoustic guitar, banjo and piano also stretch into the upper reaches. Plus, there's the lovely baritone of Russell Moore. It's a strange choice of an album for us also due to its country and bluegrass genre, but we were initially intrigued by the album's title, which is the same as one of our all-time favourite plays, written by Tom Stoppard.

CONCLUSION

Forgive its quirks and the Vitus Audio SD-025 Mk.II is a superb streaming DAC, performing at the highest calibre. If you are in the market for a component of this quality, you should certainly add it to your 'must audition' list.

SPECIFICATIONS

Vitus Audio SD-025 Mk.II

Price: $48,000
Warranty: 5 years
Outputs: RCA, balanced XLR, AES/EBU, S/PDIF
Inputs: USB Type B, optical, S/PDIF, AES/EBU, RJ45
Impedance: 80Ω (XLR, RCA)
Frequency response: +800kHz
Signal-to-noise ratio: > 110dB @ 1kHz
THD: < 0.01%
File support: up to 24-bit/384kHz PCM, DSD128 (USB)
Dimensions (HWD):13.5 x 43.5 x 42.8cm
Weight: 26kg

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FUTURE

SPECTRAFLORA
CELATA 88

Reviewer Greg Borrowman

LOUDSPEAKERS

Something old, something new, something borrowed, something blue, as goes the famous wedding rhyme that lists the items a bride is supposed to carry on her wedding day to guarantee a good marriage. It is also applicable to the various technologies and components in SpectraFlora's Celata 88 speaker design, though in this case they are to guarantee sonic, rather than marital, bliss.

SOMETHING OLD

To see the 'something old', you need look no further than the speaker cabinet itself, whose angular, bevel-edged shape, topped with an oversized horn, reminds us of the cinema speakers Altec-Lansing used to manufacture back in the 1940s and 50s. SpectraFlora's founder and head designer, Steve Van Sluyter, says the cabinet design is reminiscent of Onken speakers from Japan in the 60s and 70s, but with large front chamfers to reduce edge diffractions for the mid-bass driver, which in turn produces cleaner sound and better imaging.

SOMETHING NEW

Van Sluyter says that the oversized horn was inspired by the horn designs of Japanese designer Yuichi Arai, whose name we were unfamiliar with. Some internet sleuthing (initially misguided to the website of a Sushi restaurant owned by a famous Japanese chef with the same name!) revealed that Yuichi Arai was famous for designing two 95-degree hyperbolic constant directivity horns — the Arai 480 and the Arai 290, for use with 25mm and 50mm compression drivers respectively. Although Arai has long since retired and shuttered his website, you can still buy his unusually titled speaker design book ("Horn speaker production in the digital age: No need for prototypes! Fully predict actual characteristics through simulation") from Amazon. Unfortunately, it's in Japanese.

You should note that although the devices designed by Arai were certainly horns, and we would describe the device atop the Celata 88 cabinet as a horn, this SpectraFlora design element is actually a waveguide — or, as Van Sluyter prefers to call it, a 'Dynamic Waveguide'. Its design, he says, is the product of two incompatible theories: traditional horn theory, which dates to the early 1900s if not the late 1800s, and modern waveguide theory, which was first promulgated by Dr Earl Geddes, of GedLee Acoustic Science LLC, in 1989.

Like Arai, Geddes has also written several books about speaker design, and they're in English. However, unless you have a physics degree, they may as well be in Japanese, as you might gather for yourself if you care to peruse his chapter on waveguide design: https://tinyurl.com/geddeswaveguide.

Van Sluyter's explanation of how his Dynamic Waveguide works is only marginally less arcane. "The primary goal of a horn is to acoustically couple the driver with air, with directivity control a secondary consideration," he says. "Waveguides are the opposite — they control directivity as their priority, minimising what Geddes called 'Higher Order Modes' that contribute to the honky characteristic of horns. In early listening tests, we liked the dynamics of horns, a result of good acoustic coupling with air, and the intimacy of vocals that direct-radiating tweeters simply cannot match. But we also liked the transparency and constant directivity of waveguides based on Geddes' oblate spheroid profile. So, we tried using a traditional hypex profile vertically with a horizontal oblate spheroid profile, and they worked brilliantly together, [delivering] the dynamics of a horn without the honk, and the transparency and the constant directivity of a waveguide horizontally where it matters most. The 90-degree constant directivity horizontally assures that reflections off walls have the same frequency distribution of direct-radiating sound; the narrow vertical dispersion minimises floor and ceiling reflections. Both help the Celata 88s sound great even in highly resonant rooms."

Nestled in the throat of this waveguide is a 25mm compression driver with a mineral-loaded ketone polymer diaphragm and an 'oversized' 52mm voice coil. "Being oversized," says Van Sluyter, "the diaphragm has to travel less in the voice

SpectraFlora
AUSTRALIA
Celata 88
SER Nº
300 W
4 Ω

coil gap than typical 25mm compression drivers and, as a result, intermodulation distortion is reduced. Further, it has a 110dB-per-watt efficiency, so it's highly attenuated to match up to the mid-bass driver and as a result has far more overhead than a direct-radiating tweeter, many of which would show signs of power compression and distortion when operating at the high sound pressure levels the Celata 88 is able to produce."

SOMETHING BORROWED

Although not unique, the crossover network inside the Celata 88 is certainly rare and unusual. While it is technically a passive crossover, in that it uses traditional inductors, resistors and x capacitors (each network contains 42 capacitors… shades of Douglas Adams), many of the capacitors are DC biased by two 9-volt batteries wired in series to deliver an 18-volt bias voltage.

The DC-biasing technique used by SpectraFlora has been 'borrowed' from JBL, but, as Van Sluyter correctly points out, the American brand's patent on the technique has expired, meaning it is free for anyone to use. So why doesn't everyone use it? "The downside to DC biasing is that it is done by doubling the number of capacitors and increasing their capacitance twofold because each pair is in series, both of which add complexity and expense," explains Van Sluyter.

All of this begs the question as to why you would want to use DC bias in the first place. To answer this, it would be best to quote Gregory Timbers, the JBL engineer responsible for patenting the design, which the company marketed as a 'Charge Coupled Linear Definition Dividing Network'.

"The benefits of this technology lie in the nature of what applying a charge does to the capacitors themselves," he said. "When an audio signal passing through a capacitor changes polarity — that is, it passes through zero volts — the current flow changes direction, but it does not do so immediately; due to dielectric absorption, the capacitor 'remembers' its previous state and resists the change. This leads to blurring of transients in the drive signal, [which is] a highly audible distortion. Biasing a capacitor ensures that the signal does not reverse the current flow through the capacitor, so zero crossing distortion is eliminated." Timbers often likened the sonic effect to the difference between Class A and Class A/B amplifiers.

DC biasing also creates a piezo-electric force on the plates inside the capacitor that improves the capacitor's performance by minimising the flexing of the plates caused by the signals passing through it, but a discussion of the physics of this phenomenon is certainly beyond the ambit of this review.

SpectraFlora has borrowed intellectual technology from not only JBL but also Swiss acoustic engineer Samuel Harsch. The Celata 88 uses his quasi-transient-perfect crossover topology (which he first described in 2008, so it probably also falls into the 'something new' category) to ensure that the mid-bass driver on the SpectraFlora speaker's front baffle is time-aligned with the compression driver.

> "Although not unique, the crossover network is certainly rare and unusual... many of the capacitors are DC biased by two 9-volt batteries wired in series

"The Dynamic Waveguide and mid-bass [driver] are perfectly time aligned, as opposed to the vast majority of tweeter/mid-bass combinations in which the mid-bass lags the tweeter in time," says Van Sluyter. "The result is coherent sound through the crossover point, crisp transients, and true-to-life timbre, especially for percussion and plucked instruments. Surprisingly, even instruments that play fundamental notes many octaves below the 1.3kHz crossover point, such as kick drums and double bass, benefit from the time alignment because their harmonics extend into the range of the Dynamic Waveguide."

These techniques make the Celata 88's crossover network very large and expensive, not least because all the waveguide capacitors are foil and film, including four custom-made copper foil ones. The mid-bass driver capacitors are all metallised polypropylene (MKP), some of which are bypassed with aluminium foil and film capacitors, including some very high-value ones (because of the low 130Hz crossover point with the bass drivers). The bass driver capacitors are electrolytics bypassed with MKP caps. SpectraFlora had to use electrolytic capacitors in this application due to the smaller physical size of the capacitors required to provide 3,500µF of capacitance. Even so, the size and layout of the Celata 88's crossover meant that the components had to be split over *three* printed circuit boards, rather than the more typical one.

WHAT IS A MID-BASS DRIVER?

You may possibly wonder why we refer to

that driver visible on the front baffle as a 'mid-bass'. Well, it's simply that it is neither a midrange driver nor a bass driver, but a bit of both.

You see, it isn't truly a bass unit because, while it does deliver some bass frequencies, most of the low-end is delivered by a pair of slot-loaded, axially aligned 204mm bass drivers, hidden away deep within the cabinet. SpectraFlora refers to these drivers as 'subwoofers', but since they have very little output below 20Hz we would call that description a bit of a stretch. They essentially operate from 30Hz up to 130Hz.

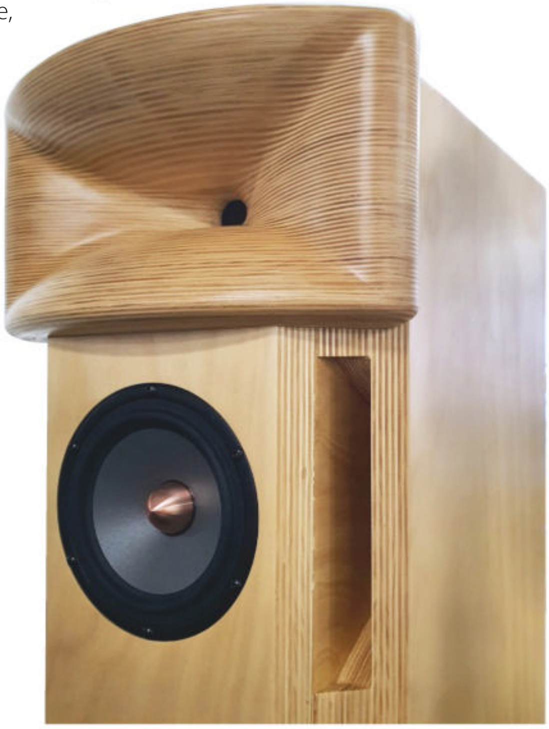
As you've probably now realised, it isn't truly a midrange unit either because, unlike most, which typically only start operating above 300Hz, the Celata 88's mid-bass driver starts operating at 130Hz, after which it continues up to 1300Hz before handing over to the compression driver in the waveguide.

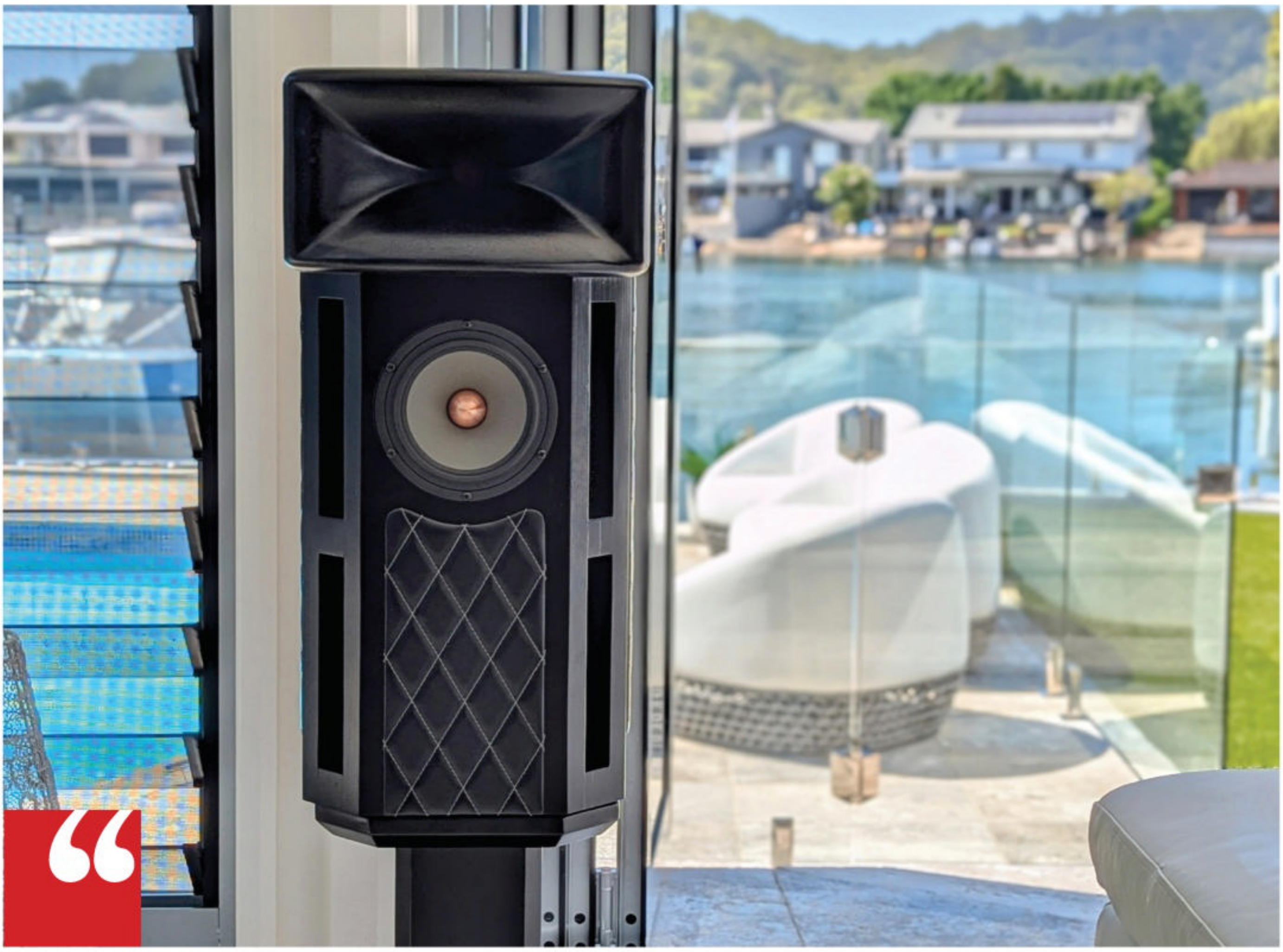
The mid-bass driver itself is a 180mm unit, made by SEAS and with a graphene-coated magnesium cone. As you can see from the image on the right, there is no dust cap at the cone's centre but instead a copper-plated phase plug. The driver has a 39mm titanium voice coil former with a long copper winding and large linear excursion (14mm linear, 26mm maximum), facilitated by a reinforced rubber surround. The overall diameter is actually slightly smaller than the listed one, at 176mm. The Thiele/Small diameter is 135mm, giving an effective cone area of 136cm^2 (slightly less than expected because of the absence of a dustcap).

It's housed in its own enclosure, which is ported via the two rectangular slots at either side of the driver. The two rectangular slots below these deliver the output from the two aforementioned axially aligned 204mm drivers.

UNUSUAL BASS CONFIGURATION

This pair of slot-loaded drivers is arranged in a rather unusual push-pull configuration. This creates a 6th-order band-pass filter that delivers 2dB of gain, but, unusually, both drivers face the same direction, so you don't get the benefit of force cancellation. This directionality was, Van Sluyter says, necessary to fit them into the compact cabinet: "Sonically, the benefit of push-pull subwoofers is that even-order harmonic distortion cancels out, which is the commonly cited reason push-pull woofers sound good. However, we believe an additional reason for their superior sound compared to direct-radiating woofers is that two cones working in opposition provide a sort of





> You don't need us to tell you that the Celata 88's cabinets are wood-working masterpieces... so complex they have to be created with a CNC robotic machine

negative feedback that reduces overshoot and ringing. In other words, they produce crisp, clean bass that is well matched to the mid-bass."

We should point out that, although we call this configuration 'unusual', it is actually one that a great many high-end loudspeaker manufacturers have employed at one time or another. In fact, Dali once used it across a complete loudspeaker range.

COMPLEX CABINETRY

You don't need us to tell you that the Celata 88's cabinets are wood-working masterpieces, with the Dynamic Waveguide and several other features sporting shapes so complex they have to be created with a 7-axis CNC robotic machine. You literally could not create them by hand or with conventional cabinet-making machinery.

The timber used is responsibly sourced here in Australia, with the plywood made from hoop pine (*araucaria cunninghamii*), plantation-grown in Queensland. SpectraFlora also uses plantation-grown Northern silky oak (*cardwellia sublimis*) and sometimes salvaged timber. It currently employs salvaged timber (*red ironbark/eucalyptus sideroxylon*) in its 'Limited Range'.

At the time of writing, SpectraFlora sells two 'Limited Range' models — a black-stained pair with diamond-stitched leather and a silky oak Dynamic Waveguide, and a natural, clear satin polyurethane-finished pair with highly veined cherry leather and a red ironbark Dynamic Waveguide finished with hardwax oil. The red ironbark timber was salvaged from a former Royal Australian Air Force base in Dubbo, New South Wales, built during WWII. Pricing for these limited models is $38,000 per pair, plus $1,000 for matching stands.

Should these models not be available at the time you are reading this review, SpectraFlora says it can customise its speakers specifically for your application, offering various colours of stain for the cabinet and waveguide, painted finishes, and leather or fabric exterior panels. Custom designs are priced per project and require a $10,000 deposit before fabrication commences.

BATTERIES AND BUTTONS

Around the rear are two pairs of high-quality multi-way speaker terminals. In a standard configuration, the lower pair drives the dual internal drivers while the upper pair takes care of the front-firing mid-bass driver and the waveguide. The two sections are linked via gold-plated bus-bars. These terminals can, however, be changed so that the upper terminals connect directly to the waveguide.

Above the speaker terminals are two fold-down compartments holding the 9V batteries that provide the voltage to bias the capacitors in the crossover. You would be best advised to use either Alkaline or Lithium batteries, but you needn't worry about replacing them regularly, as the load presented by the network is such that the batteries will essentially operate for whatever shelf life is printed on the battery, so you'll only need to replace them every five or ten years!

Above the dual battery compartments is a small push-button enabling you to adjust the speakers' frequency balance by boosting the waveguide's treble output. 'The button on the back provides a treble boost designed to benefit listeners with hearing loss, particularly age-related, at high frequencies,' according to SpectraFlora.

Above this is a glorious floral design that is CNC-routed into the cabinet and stained. It's certainly very clever and beautiful. The only pity is that it's on the back of the speaker, where it will rarely, if ever, be visible.

LISTENING SESSIONS

We initially set up the Celata 88 on stands some distance from the rear wall of our listening room, and were immediately impressed by both the bass quality and extension. Indeed, we cannot remember when we last heard similarly sized speakers capable of delivering such low frequencies. Still, we believed that the low-end would benefit from some boundary-loading, so we moved the speakers backwards, almost to the wall, and were gratified to hear that the sonic quality remained while the volume of the deepest bass increased, as did the extension. We were also pleased to hear that the Celata 88's stereo image did not narrow, as often happens when speaker cabinets are put close to a wall. We can only put this unusual attribute down to the unique waveguide.

That the Celata 88 performed optimally so close to a rear wall is a huge plus in our book. After all, the last thing you want to be doing with your speakers is moving them out of the way for your day-to-day routine, only to have to move them back into their 'optimal' position whenever you want to do some serious listening — which is what you have to do with the majority of standmount speakers.

Listening to Steve Hackett's classic album Defector was all it took for us to appreciate the speakers' ability to deliver superb bass. The Celata 88 made it child's play to hear the difference between Dik Cadbury's bass guitar and his Moog Taurus, while the sound from John Shearer's drum kit was simply amazingly delivered. The speed of his sticks on the track *Slogans* is almost unbelievable, yet the Celata 88's drivers not only kept up with the pace but also delivered the dynamics of the myriad transients. With Nick Magnus's keyboard work on the same track, his finger-work is insanely good, and the precision of the delivery of the SpectraFloras lets us appreciate every single note.

If you aren't a prog-rock fan, you'll also hear the extent of the Celata 88's superb bass detail and extension by listening to Massive Attack's Mezzanine. Opening track *Angel* is a perfect vehicle, but don't miss how well the speakers deliver the underlying atmospherics. Listen to the clarity of the sound in the lead-up to *Teardrop*, too, and the perfection of Elizabeth Fraser's vocal projection through the tapestry of sound. Don't miss how the waveguide can reproduce the Morse code-like 'beeping' in the background so that it's always audible, and without disturbing the mix.

Speaking of which, the articulation of the compression driver means that all the frequencies within its compass are delivered with jaw-dropping precision, not to mention crisply, cleanly and without a hint of the 'sizzle' that can tarnish the treble delivery of conventional tweeters, particularly those of the metal-domed variety. (And if you do want 'sizzle', it will only be a matter of pushing those rear buttons to give the highs a boost. We would not recommend this, though, as the boost is absolutely massive — in our minds, to 'overkill' levels.)

The compression driver's articulation is splendidly exemplified on Steely Dan's rightly-lauded Aja, which deservedly won a Grammy for Best Engineered Recording. Altogether, it took 40 musicians to get it onto vinyl (it was 1978, after all), and their contributions are all honoured by the performance of the SpectraFlora speakers. Despite the articulation, there's still a natural and very pleasing warmth to the delivery of the upper mids and lower highs that is totally aurally satisfying.

You will need to ensure your amplification is up to scratch if you want to extract the best performance from the Celata 88, because they are not overly efficient (SpectraFlora's specification is 86dBSPL) and their impedance is lower than average, remaining below six ohms over almost the entire audio spectrum.

CONCLUSION

So we are very close to the end of this review and haven't yet explained what that 'something blue' inside the speaker might be. Well, it's the colour of some of the capacitors in the Celata 88's crossover! However, we must say that we started feeling a little blue upon learning how much we would have to dip into our savings to own a pair of Celata 88, because we had wanted to purchase the review pair rather than send them back. (How's that for a recommendation?) After all, we had never heard such good sound — or so much deep bass! — from a pair of speakers so small, room-friendly and good-looking that our better half would allow them to grace our living room's decor, rather than banish them to our 'audiophile den'.

Sure, the SpectraFlora Celata 88's asking price means that if speaker size is not an issue for you (or your significant other), many very large and very good-sounding floorstanders could complicate your buying decision. But if cabinet size is a deciding factor, you need neither look nor listen any further… just choose your preferred finish.

SPECIFICATIONS

SpectraFlora Celata 88

Price: $35,000/pair (speakers); $1,000/pair (stands)
Warranty: 4 years
Frequency range: 33Hz-20kHz
Impedance: 4ohms
Sensitivity: 86dB
Recommended amplifiers: >40W tube; >70W solid state class A or A/B
Maximum power: 300W (peak)
Dimensions (HWD): 71.7 x 35.3 x 44.8cm
Weight: 46kg

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REVIEW

FOCAL
DIVA UTOPIA

WIRELESS SPEAKER SYSTEM

Reviewer Ketan Bharadia

The template for high-end audio feels like it is set in stone, and it has been that way for the best part of five decades. In this aspirational arena, 'separates' (individual hi-fi components) rule and every piece in the audio chain is split as far as possible to the point where it isn't unusual to have systems with box counts reaching double figures.

That's not necessarily a problem for purist audiophiles who have lots of space and the time and will to research and demo component synergy and setup. But there remain many music lovers who want excellent sound yet prefer it wrapped in a neater, less cluttered and more stylish package, and Focal's Diva Utopia could well be the answer for them.

Entire streaming systems that take the form of simply a pair of stereo speakers are hardly new. KEF has made hay with its various LSX, LS50 and LS60 Wireless offerings, while the likes of Bowers & Wilkins, Dali, JBL and Triangle have also contributed some fine efforts. However, none of these products sit at what would be considered the high-end of the market.

At this lofty level, Focal's solution is almost unique in packing a streaming module, digital-to-analogue converter, amplifiers and drive units all into a stereo speaker format, though some Goldmund and Meridian products have come close to such integration.

The Diva Utopia are described as wireless, and they mostly are! Unsurprisingly, no company has come up with a way of getting rid of the mains cable that each speaker requires. And if you want to improve on the 24-bit/96kHz wireless transmission limit between these speakers, using the supplied cable to link them raises that to 24-bit/192kHz.

Recordings of higher resolutions — these speakers will accept up to 24-bit/384kHz PCM and DSD128 files — are downsampled in this design, while DSD files are converted to PCM. Is that important? It probably is, given the system's price point, although most people won't likely have many recordings at these higher sampling rates anyway.

Ultimately, the Diva Utopia can be given some leeway to impress with its sonic performance.

SPECIALITIES COMBINED

Sensibly and unsurprisingly, the system's electronics are designed by sister brand Naim. That's a good start given the British-based company's superb track record in both streaming and amplification components, many of which are class leaders in their respective fields. The UPnP streaming platform inside the Diva Utopia is as well-equipped as you would expect. It can stream music across a home network from a NAS unit and supports all the usual streaming platforms — Spotify Connect, Tidal Connect and Qobuz — while protocols such as AirPlay 2 and Google Cast are also onboard. Bluetooth is on the menu in the high-quality aptX Adaptive guise, too.

There is plenty of power on tap. A 250-watt Class A/B power amplifier is dedicated to the four 16.5cm 'W' sandwich cone bass units (arranged in a push/pull configuration in each speaker), while both the 16.5cm 'W' midrange and 27mm inverted beryllium dome tweeter are driven by dedicated 75-watt modules. That's 400 watts per enclosure, which should be plenty to get to party levels in some pretty large spaces. While the power amplifier circuitry isn't lifted directly from a specific Naim product, the design is closely related to those used in the brand's highly rated units.

That bass driver quartet is tuned by a downward-firing port that exits onto the substantial sculptured aluminium plinth.

> “ That's 400 watts per enclosure, which should be plenty to get to party levels in some pretty large spaces

The 'W' cone is a long-running Focal technology that features a foam core between two glass fibre layers to give a composite structure that is claimed to combine lightness with rigidity and good damping. That blend of qualities qualifies as the 'Holy Grail' as far as cone behaviour is concerned. The inverted dome tweeter is another one of Focal's trademark technologies, and when the diaphragm is made of beryllium (claimed to be rigid, light and with good damping — notice a pattern?), the result is typically as sweet and detailed as they come.

BEYOND STREAMING

A decent amount of physical connectivity is onboard, with the Diva Utopia having HDMI eARC, optical and USB (Type A) digital connections alongside stereo

line-level RCAs. There is no integrated phono stage, though at this level a good-quality outboard device is likely to be the better choice anyway if vinyl replay is a priority. All these connections are found on only one speaker, which can be configured to be the left or right channel through the dedicated Focal/Naim companion app according to your requirements and preference.

This app is one of the better ones we have come across, delivering a slick and stable user experience that makes browsing large networked music libraries a breeze. For the Diva Utopia, it adds the option of room correction for optimising the system's performance according to the room it is in, and the process works pretty well. The user has to take some basic measurements, such as the distance from the speakers to the wall behind them, and to the side walls on each side. There is then a series of listening tests that ask you to balance the volume between different frequencies of test tones in steps from deep bass upwards.

While not as simple and fuss-free as a microphone-based system or as in-depth as Linn's more sophisticated Space Optimisation software, the resulting equalisation is relatively subtle and positive. In our well-behaved 3 x 7 x 5m (HWD) test room, using the room correction software results in a cleaner, better-focused and slightly more precise presentation. If your room has more obvious issues, we think this software will be worth implementing.

However, do note that activating the equalised room profile did, in our particular setting, somewhat adversely affect the Diva's low-level dynamic expression and rhythmic drive to a degree where, ultimately, the EQ was left off for the majority of our listening time. Still, it's great that Focal offers the option.

The standard remote included with the speakers looks to be based on the same design as the tool that comes with Naim's more premium products, but here it is simplified to cover just the basic operations such as power on/off, input selection and volume level. While it is nice not to have to revert to a phone or tablet to perform such simple playback functions, it's a shame that the tool's casing feels pretty insubstantial compared to the rest of the nicely styled and no-holds-barred package.

Focal's bravery with the design of the speaker system itself is admirable. Most others would have used a rectangular

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Considering the Focal Diva Utopia speaker system won the Best Sounding Room award at the Australian Hi-Fi Show in April, delighting the ears of the hundreds of Sydneysiders who heard and voted for it, you may be wondering where you can demo a pair for yourself.

As Australia's only store with a 'Focal Powered by Naim' showroom, the only retailer in Australia with access to these sensational speakers is Premium Sound in Melbourne, who worked the room at the show and clearly lived up to their name, given the votes that stacked up to give it the win.

The store's renovated showroom and listening spaces in St Kilda, which opened last October, feature state-of-the-art acoustic treatments, precision-calculated reflection points, and advanced calibration systems in a bid to be the ultimate destination for discerning audio enthusiasts looking to experience — and possibly take home — some of the world's finest audio equipment.

"When you invest in speakers of this calibre, the presentation environment is crucial," said Mark Raggett, Area Account Manager at Naim Audio. "Premium Sound's new showroom provides exactly the kind of space needed to fully appreciate the Diva Utopia's capabilities."

Premium Sound's Rob Bergervoet and his team are passionate about music and hi-fi and ready to welcome through their doors anyone who wants to discover why the Focal system represents the pinnacle of contemporary audio engineering. Contact them today to arrange your personal demonstration.

Premium Sound
T: (03) 9534 2673
W: www.premiumsound.com.au

FOCAL
FOCAL
DIVA UTOPIA
WIRELESS SPEAKER SYSTEM

> “It was hard not to be impressed with the authority and power on offer as the speakers played Beethoven...

MDF box, albeit clothed in some luxurious wooden veneer, but here we have a high-density polymer enclosure that's strategically reinforced where required and designed with curves and angles that give it a wonderfully modern and stylish appearance. The structure feels solid, damped and dense, which helps boost the speaker's aura of quality. The standard grey felt-like finish is lovely, and note that the thick material can be removed quite easily to open up the option of customising to tastes. At the moment, there is only one option, but we imagine more will be offered over time.

SETUP SIMPLICITY

One of the clear advantages of such integrated speaker systems is how simple they are to set up compared to a system of separates. Once you get them in place in your room, connect them to your network, and go through the room correction process, you're good to go. The process takes mere minutes.

Fair play to Focal, it has put a good amount of thought into the packaging of these 64kg towers, supplying useful instructions and a substantial wooden plank in the box to make it easy to wheel the hefty speakers out. And you really do wheel them, as the speakers come fitted with four casters to allow them to be manoeuvred into place easily. Once you have finalised their exact placement in the listening room, you can add spikes. Using spikes adds a degree of precision and clarity to the sound that makes them essential if you want to get the best out of the speakers.

In the same vein, hardwiring the speakers to each other rather than opting for the wireless connection is recommended too — not because the resolution limit is higher, though that is handy to have, but because even with CD-spec music, the wired link delivers a slightly more dynamic and expressive performance. True, going wireless is neater and proves stable in use, but it seems a shame to hold back the performance when it is so avoidable.

The Diva Utopia ended up around a metre from the test room's back wall and well away from the sides. Even without the speakers being equalised, that positioning facilitated an even tonal balance, plenty of bass authority and impressively broad stereo imaging. Once the toe-in towards the listening position was optimised, the soundstaging was crisp and well-defined, delivering a fine impression of depth and scale. Individual instruments were locked in place and refused to blur even when the music became demanding.

LISTENING SESSIONS

It was hard not to be impressed with the authority and power on offer as the speakers played Beethoven's *Ninth Symphony*. The Diva Utopia delivers a huge sound that impressed us not only in the way that it reproduced a wonderfully wide dynamic envelope but also in the way it rendered lows with such power, grip and agility. Those four bass drivers per cabinet can really pump out huge amounts of bass effortlessly.

This is a sound brimming with control and composure, where a multitude of instrument strands can be tracked without issue, and the sense of organisation is reassuring. As the

music ebbed and flowed, the Diva Utopia had no trouble following suit, uncovering plenty of detail and conveying it with terrific precision. The leading edges of notes were as crisp as you like but had no sense of unnatural hardness.

These Focals can play loud, too — and importantly they stay composed when pushed. There's no doubt they are capable of delivering high volume levels in large rooms without straining. It helps that they are about as refined as such speakers get. There is no excessive brightness or aggression here, just a smooth and cultured balance that refuses to make a meal of things, even with poor recordings. This is a valuable trait that few high-end products share.

The Diva *could* let loose a little more. With Florence And the Machine's *You've Got The Love*, the Focals had a civilising influence over the music. This system calmed the rough edges of the sound, making it an easier listen but also losing a little of the vibrant energy of the recording in the process. This certainly isn't enough to stop the song from being enjoyable, but there was just that feeling that the speakers were holding back ever so slightly.

Elsewhere, though, there isn't much to complain about at all. It was a wonderfully clean and clear presentation, with Florence Welch's powerful vocals coming through with conviction. Instruments and voices were rendered with convincing texture and a good degree of natural warmth. It was a tidy and controlled presentation with a decent if not explosive sense of rhythmic drive.

Thankfully, the Diva Utopia's performance stays pleasingly consistent whether listening to music via the built-in streaming module, the stereo analogue input or the optical connection. Indeed, it's rare to come across a product where the performance of each of these inputs is so balanced.

CONCLUSION

Overall, there is much to like and admire in Focal's Diva Utopia. This system truly manages to deliver a proper high-end sound from a neat two-speaker form factor — a rare feat. Despite a slight misgiving about the sanitising effect it can have on music, when it comes to clarity, precision and bass performance, it has little to fear from combined separate alternatives at the same price. As such, it has to be counted as a success. Æ

SPECIFICATIONS

FOCAL DIVA UTOPIA

Price: $60,000
Warranty: 2 years
Design: Three-way bass-reflex active wireless
Drivers: 4 x 'W' 16.5cm push-pull configuration woofer; 'W' 16.5cm with TMD surround and NIC motor midrange; 27mm pure beryllium 'M'-shaped inverted dome tweeter
Frequency response: 30Hz-40 kHz
Amplification: LF: 250W Class A/B; MF: 75W Class A/B; HF: 75W Class A/B
Inputs: HDMI eARC, optical, USB Type-A, RCA, Ethernet, Wi-Fi 6, aptX Adaptive Bluetooth
Dimensions (HWD): 121 x 42 x 56cm
Weight: 64kg

Contact: Westan
T: (03) 9541 8888
E: SalesVIC@westan.com.au
W: www.westan.com.au

SpectraFlora
AUSTRALIA

REDISCOVER MEANING IN MUSIC

SpectraFlora's Celata 88 loudspeakers are made in Victoria using responsibly sourced Australian timber. Available in custom finishes to enhance any home.

The Celata 88 was developed over four years with a focus on emotive sound.

New patent pending designs include the constant directivity Dynamic Waveguide and Celata woofer system, which contains two 8-inch, horizontally opposed, slot-loaded subwoofers.

The result is dynamic, engaging sound you can't live without.

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➤ Pro-Ject Audio Systems

Tosca by Puccini, Leontyne Price, Di Stefano, Taddei / Vienna Philharmonic with Herbert von Karajan **(Decca, 1963)**

PUCCINI TOSCA
LEONTYNE PRICE
DI STEFANO TADDEI CORENA
VIENNA PHILHARMONIC
HERBERT VON KARAJAN
DECCA

My favourite opera record. This recording is unbelievably dramatic and super powerful, yet there is also incredible timbre in the voices. This one is only for bigger systems, so you can really experience the big dynamic shifts that show how amazing Tosca is.

Don Juan by Richard Strauss, Tod und Verklaerung, Also Sprach Zarathustra / Vienna Philharmonic with Herbert von Karajan **(Decca, 1960)**

My favourite classical record. This record is from a series I created with the Vienna Philharmonic Orchestra and Universal Music, which included some favourite VPO recordings from the past. This performance combines the very best composition with the very best interpretation by a conductor, recorded in the legendary Sofiensaal in Vienna. The record is taken directly from the original mastertape and, while it has some noise, the tone and the sweetness of the music are without comparison. It is proof that we were already capable of great recordings even over 60 years ago.

JONATHAN NYE

➤ Michell Audio

Legend by Bob Marley and the Wailers **(Island Records, 1984)**

LEGEND
BOB MARLEY

Back in 1995, at just 15 years old, I found a Technics turntable abandoned in a skip. To me, it was a treasure waiting to be revived. After giving it a thorough clean and a new stylus, I was eager to test it out. I hooked it up to my Kenwood amplifier and Mission speakers, but there was just one problem — I had no records to play.

My mum didn't have any vinyl, but she asked around on my behalf. Before long, a friend kindly donated a copy of Legend by Bob Marley. Excited, I rushed to my bedroom, ready for my first proper vinyl experience. Having already heard the tracks on cassette, I thought I knew exactly what I was in for. But as soon as the stylus touched the groove, I realised I couldn't have been more wrong.

The music felt different — more alive. There was an openness and warmth I had never heard before. The bass was fuller, the vocals richer — it was as if Bob Marley himself had stepped into the room. I sat there, mesmerised, playing the entire album twice through without a break. The experience was so powerful that I ran to the lounge, urging my parents to listen. I had to share this incredible discovery.

That moment changed everything. Music wasn't just something I listened to any more — it became something I felt. It was the beginning of a lifelong love affair with vinyl, a passion that, at the time, I had no idea would shape my future. Years later, fate had one more surprise in store for me. I married the granddaughter of a turntable manufacturer and eventually found myself running a company so deeply connected to my love of vinyl. Sometimes, life has a way of bringing things full circle. And for me, it all started with an old turntable from a skip and a copy of Legend.

From a Room: Volume 1 by Chris Stapleton **(Mercury Nashville, 2017)**

This is more than just a great album — it's a masterclass in pure, unfiltered sound. Produced by Stapleton and Dave Cobb, the album embraces a minimalist approach, stripping away excess production to focus on raw musicianship, heartfelt songwriting, and the unmistakable warmth of a live performance. Every note, every breath, and every subtle nuance is laid bare, giving the listener the feeling of being right there in the room with the band.

The album's sparse yet powerful production not only makes it one of my favourite albums, it also makes it ideal for developing new products, such as the Apollo phono stage. I love authenticity, emotion, and a connection to the artist's original vision; that excites me and drives us all at Michell.

TETSUYA ITANI

➤ Technics

Symphony No. 9 by Anton Dvorák / London Symphony Orchestra with István Kertész **(Decca, 2016)**

I think it's a good idea for every vinyl fan to have a copy of this album. The VPO version is more famous and popular than Kertesz's from The New World, but I prefer the LSO version because it is more energetic.

I also love For Sentimental Reasons by Linda Ronstadt, Nelson Riddle & His Orchestra (Asylum, 1986). This record has a realistic and vivid live sound, and Linda Ronstadt's vocals in her prime are also highly appealing.

MAT WEISFELD

➤ VPI

Blood Sugar Sex Magik by Red Hot Chili Peppers **(Warner Bros., 1991)**

It was a rough week at VPI — one of those moments that left me questioning why I continued pushing forward as a manufacturing business owner. I couldn't sleep. It was late, and the weight of it all lingered. So I put a record on the turntable and a pair of headphones over my ears.

The night before, my girlfriend — now my wife, Jane — and I had been listening to Blood Sugar Sex Magik, my brother's favourite album. That night, though, I was alone with my thoughts, struggling with the question that haunted me: what would my older brother Jon do? After all, he was always meant to run VPI.

It's 2am and I'm half-asleep; the first

track, *Power of Equality*, played, and a lyric hit me hard: "Little brother, do you hear me? / Have a heart, oh, come get near me / Misery is not my friend / But I'll break before I bend / What I see is insanity / Whatever happened to humanity?"

That moment grounded me and gave me my answer. The very next day, I designed the VPI Prime... and changed the entire direction of the company.

TOURAJ MOGHADDAM

➤ Vertere Acoustics

Thelonious Monk / Sonny Rollins (Prestige, 1956)

Thelonious Monk
Sonny Rollins

Specifically, the track *Work* by the Thelonious Monk Trio. Monk's playing, 'phrasing' and construction were just unbelievable — almost like drumming a tune with exceptional timing and delicacy. The recording and production is not bad at all, but this track was what led me to look into record player design!

I'll never forget hearing Monk on the TV, around 1983-84, and being able to relate to his timing, playing style and key changes so much better than I could when listening to his albums on my turntable at the time. It was an eye-opener and made me want to understand the reason, and whether a turntable could be designed to achieve this.

The Wall by Pink Floyd (Harvest/EMI, 1979)

PINK FLOYD
THE WALL

I was an undergraduate when The Wall first came out in 1979 and I remember like it was yesterday when I first put it on, and WOW! It was an opera and so exhilarating — a proper roller-coaster ride. I sat through four sides and at the end was just gobsmacked.

The recording came across as great at the time and quickly became a 'reference' and joined The Dark Side Of The Moon. Even today, it is often used at our demos and events. The album was only surpassed by the first live concert of it, which I saw at Earl's Court in 1980.

Cantate Domino by Oscars Motettkör choir, Torsten Nilsson, Alf Linder, Marianne Mellnäs (Proprius, PROP 7762)

It was in the early '80s when I first heard this album at The Sound Organisation in London. Roger Macer (RIP) was not just a sterling retailer, he was also a friend. We shared lots of music listening sessions and a good few late night/early mornings at Ronnie Scott's...

The sound quality of this vinyl is exceptional — it's a great pressing. But more importantly, the whole album is like a 'haunting' — so emotional, in harmony, with an almost life-like presence. It's so good that I got my copy within a day or so. And don't forget, in those days there was no online or Amazon...

ROY GANDY

➤ Rega Research

Show Some Emotion by Joan Armatrading (A&M, 1977)

Joan Armatrading

At Rega, we don't listen to the 'sound' of our equipment, but rather listen for the intricacies of an artist's performance, or the discernibility of complex musical arrangements. If we can correct any issues here, any issue with the sound is automatically corrected.

One of the earliest [vinyl] test tracks I can recall using for this, which we still use today, is *Willow* by Joan Armatrading from the 1977 album, Show Some Emotion. It's a beautiful performance, arrangement and recording, which makes it easy to spot any issues in the sound reproduction.

Greatest Hits 2 by Queen (EMI/Parlophone, 1991)

If you're looking for something more upbeat to test your system, *I Want To Break Free* is a great one, and needs little introduction. However, if you're looking for this on vinyl, be careful to only choose the 1991 pressing of the Greatest Hits 2 — many other versions of this song are less well pressed.

YOSUKE KOIZUMI

➤ Audio-Technica

Basket of Light by The Pentangle (Transatlantic, 1969)

One of my favourite music genres is British folk music. The band Pentangle was formed in the late 1960s and they are a mixture of jazz and folk musicians. Their debut album is incredible, but I personally prefer listening to their third album.

Page One by Joe Henderson (Blue Note Records, 1963)

This is Joe Henderson's first album from Blue Note Records. All of his five titles on Blue Note are amazing, but you can enjoy his artistic expression with Latin rhythm from the first track on side A. All of the other tracks are unbelievably nice. We cannot expect to get the original pressing at an affordable price, but later issues from the 1970s to early 80s, with 'VAN GELDER' engraving around the centre label, are still very enjoyable.

ROBERT SUCHY

➤ Clearaudio

Grace by Jeff Buckley (Columbia, 1994)

JEFF BUCKLEY
GRACE

My personal favourite is Jeff Buckley's version of *Hallelujah*. This is music emotionally performed at its best; profoundly moving when a cartridge, tonearm and turntable sing as they should.

Music of Game of Thrones by The City of Prague Philharmonic Orchestra (Silva Screen Records, 2017)

This is a current all-round favourite. Ramin Djawadi's awesome music is brilliantly performed and recorded. This is a vinyl record that connects you to the genius of the composer and the skill of the musicians — and it evokes key moments from the TV series, too. Music in 3D!

GAME OF THRONES
Dune
THE INCREDIBLES

KALEIDESCAPE

MOVIE PLATFORM & PLAYERS

California-based Kaleidescape is a unique company with a unique offering: its players, servers and networking provide an alternative to watching movies via the usual streaming services or on disc. And further, it offers the ability to distribute its high-quality video and audio across multiple rooms in a home.

It does so in style. Kaleidescape offers a beautiful interface on screens both large and small. And in an age where streaming services compress movies in ways we barely understand in order to squeeze them down unreliable pipes to our homes, the platform accesses

er a valuable
intrigue, while
ney to fulfill
Monsters, Inc.
The Karate Kid
Toy Story
Airplane II The Sequel
Casablanca
The Shallows
Dune
The Lord of the Rings
Life of Pi
Audrey Hepburn
My Fai
Bohemian Rhapsody
Star Trek The Motion Picture
Dawn of the Planet of the Apes
the twilight saga breaking dawn
Frozen
Ratato

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kaleidescape
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Dune
A new duke takes over a valuable planet amid political intrigue, while his son begins a journey to fulfil an ancient prophecy
GAME OF THRONES
CRAZY RICH ASIANS
MONSTERS, INC.
The Karate Kid
TOY STORY
AIRPLANE II THE SEQUEL
CASABLANCA
THE SHALLOWS
LIFE OF PI

the company's own dedicated movie collection, downloads them in advance to a dedicated server, then plays them in full quality from cached content: no bottlenecks, no buffering.

How full is full quality exactly? Kaleidescape notes that its video bit-rates can be 10x higher than typical streamer rates, promising an end to encoding visual artifacts such as softness, noise and banding. Meanwhile, its audio bit-rates also claim to be 10x higher than typical streamer rates, including lossless Dolby Atmos and DTS:X, hence promising to "dramatically elevate your processor, amplifiers, speakers, and room treatments". This all corresponds to the quality you would expect from the best disc version available, but with all the convenience of downloadable and file-based replay.

> The quality you would expect from the best disc version available, but with all the convenience of downloadable and file-based replay

Kaleidescape also adds cue codes to its movies, annotating such things as end credits and intermission cues, as well as technical data such as screen size and aspect ratio, all of which can be read by its players and used within smart home automation to trigger correct screen masking, even to bring up the room lights automatically at the end of the movie.

ARRIVING IN OZ

So it's clever, high-quality stuff. Perhaps unsurprisingly, the Kaleidescape experience doesn't come cheap, though it would be more easily absorbed within the overall budget of a dedicated home cinema installation, a new build or a renovation. It is in such environments that we frequently find Kaleidescape gear in residence. The company has been making its movie servers for more than 20 years, but it has never been 'officially' available in Australia. Now it is, with its own Australian movie store, and a new official distributor, Audio Active. A second distributor, National AV Solutions, handles specifically marine installations.

"Our Australian Kaleidescape store allows us to sell our Strato Players and Terra Prime Servers in Australia," the US company tells us. So let's take a closer look at those...

TERRA PRIME SERVER

It sounds like a Transformer, but the Terra Prime is Kaleidescape's movie server, equipped with storage in a variety of different capacities, with a choice of traditional hard drives or solid-state storage, which soups things up nicely. You can also gang up additional servers to multiply your storage options. We got to play with a Terra Prime 8TB SSD, which costs $5,899 here in Australia.

You may want more storage than that. In Kaleidescape's specifications, 8TB of storage is marked as sufficient for 125 movies — a good collection, but serious movie lovers will no doubt want more. The current largest servers available in Australia are a 96TB HDD Terra Prime at $48,999 (room for 1500 movies) or a

123TB SSD version at, gosh, $135,999. In defence of the pricing, the drives within Kaleidescape servers are enterprise grade.

The good news is that you'll usually need only one Terra Prime, even for an extensive home. One server can feed a whole home of players: from its SSD servers, Kaleidescape guarantees 25 concurrent playbacks of movies at the same time! Control is available using an infrared remote or Kaleidescape's own mobile app, in addition to possible links to a home automation system, be it Crestron, Control4, Savant or others. So your main point of interaction will likely be with one of the company's Strato players.

STRATO C 4K PLAYER

Strato players come in three varieties: we played with the middle Strato C, which delivers 4K movies extremely well, albeit doesn't deliver Dolby Vision high dynamic range (Kaleidescape doesn't carry any HDR10+ content). The higher Strato V *does* do Dolby Vision, so would be especially preferable for those planning to use the Strato C with a modern TV.

The other difference is storage: the Strato C has no internal storage, so it must be used in conjunction with a Terra Prime server. But the Strato V does have storage (960GB), as does the the lower 2K-only Strato M (480GB). They can therefore operate independently from a server, and might be something on which you could store a few movies and then take off to a holiday home. Whatever combination you choose, Kaleidescape components are very well-crafted, even though likely tucked away in a rack somewhere. Sleek aluminium casings bring confidence in build quality and longevity.

The Kaleidescape Remote bundled with the Strato C proved responsive, with satisfyingly clicky buttons for operating the user interface, if not backlighting for the buttons. A neat colourful kids' remote is also available, with automatic barriers sensibly invoked for adult content.

GETTING UP AND RUNNING

We found setup to be brilliantly simple and intuitive. There is a robust web interface to adjust settings on the Kaleidescape — daunting at first, but intuitive. You can tweak video and audio output settings, such as frame rate and sound format: it's incredibly useful that these settings can be adjusted remotely.

Meanwhile, the star of Kaleidescape's presentation — and probably what sells the system to many users — is the onscreen interface, always a premium experience, and much copied by later comers to the movie serving experience. It's the 'covers' view that everyone loves: a large (variable) grid with poster thumbnails of your movies (as you can see in this review's opening image). Hovering over a film for a few seconds will shuffle the order to bring closely related content into view. For example, hovering over *Dune: Part Two* on our unit brought up *Blade Runner 2049* and *Dune* — both sci-fi movies directed by Denis Villeneuve and, in the case of the latter of course, part of the same franchise.

The easiest way to play content is to purchase it from the Kaleidescape movie store. This is country-specific, which, as with other streaming services, can be both a blessing and a curse, potentially gifting more local content, but also subject to licensing agreements. Our testers in the UK last year found a big hole for Disney and Universal NBC content in particular — but since then Universal has been added, so it is an evolving process. Now Australia has its own store, the previous option of VPN-ing to the larger US store will be discouraged. So how does Australian access compare?

"For Australia, we launched with over 3400 titles from 4 major studios, with more to come," Kaleidescape HQ tells us. "Today, 20% of those titles (over 750) are in 4K quality. As more studios are added to the store, the catalogue will continue to grow."

That figure of 750 4K movies compares with over 2400 4K titles currently available to US users. The four studios currently signed up for Australia are MGM, NBC/Universal, Paramount Pictures and Warner Bros-Discovery, with prices from $9.99 for 2K movies, $14.99 for 4K movies, rising to $34.99 for some new movies (e.g. *Dune: Part Two* in Dolby Vision), with one outlier (*Companion*) at $54.99. You can look for yourself to see the latest availability: you should be able to browse the Australian store via this quick link: *tinyurl.com/kstoreaus*.

If prices for movies seem high compared with conventional streaming, remember you are getting lossless quality up to 4K, so these should perhaps be compared with 4K Blu-ray disc prices, which often aren't cheap either, as opposed to, say, movies purchased on Apple TV, let alone watched as part of a Netflix package. It's all part of Kaleidescape's premium nature. Some offerings even arrive while still screening in cinemas (e.g. *Black Bag* while we were looking), so you might expect to pay a premium in those instances.

BENCHMARK QUALITY

Besides, the experience tends to make you forget the pricing. It takes roughly 10 minutes to download a film, depending on your network speeds, and then your cover appears on the interface, ready to play. And from the first frames, it was clear that the Kaleidescape's delivery is head and shoulders above the quality of the same movie delivered via an Apple TV

▽ ANY NUMBER OF STRATO MOVIE PLAYERS CAN BE GROUPED INTO A SYSTEM, WITH UP TO FOUR SERVERS PER SYSTEM.

kaleidescape
kaleidescape

△ WHEN STRATO C OR V IS GROUPED WITH A TERRA PRIME SERVER, ITS INTERNAL STORAGE IS DISABLED (IN FAVOUR OF MORE SCALABLE SERVER STORAGE), AND THE FULL KALEIDESCAPE EXPERIENCE IS ENABLED.

4K video streamer. We played *Mad Max: Fury Road* three ways: on 4K Blu-ray disc, on Apple TV (streamed from Apple's own iTunes store), and on Kaleidescape. While the Apple TV version initially didn't look bad, after switching between the three sources it was clearly the least visually appealing option of the three.

The Kaleidescape Strato C delivered a picture that was clear, detailed and vibrant, noticeably sharper and more impactful than that from Apple TV. The exaggerated colours of George Miller's action epic were delivered with a richer and bolder flair via the Kaleidescape player, while subjects on screen were more sharply outlined while remaining natural, giving them a solid, three-dimensional effect.

The disc player's Dolby Vision advantage was more notable on the latest Dune movie, the spice sands of Arrakis a touch better realised with enhanced depth and slightly richer colours. But these differences would presumably be mitigated by upgrading to the Dolby Vision-capable Strato V player.

Crucially, there were zero issues regarding latency or buffering at any point during our time with the Kaleidescape server and player system.

Sound format support is full, including lossless Dolby Atmos and the rarer DTS:X. We note the Strato C passes through lossless audio (the Strato V can decode it as well), but it handed off just fine to our reference AV receiver, while its performance with immersive formats was again a clear step up over the Apple TV 4K soundtrack, with a richer and more expressive sonic character. The revving engines, booming drums and sounds of the iconic growling guitar flamethrower in *Mad Max: Fury Road* were all delivered with greater slam and higher detail from the Kaleidescape, the sonic performance of which was broadly indistinguishable from the sound coming off our discs.

EXISTING MOVIE LIBRARY

One final question: can you load all your existing downloaded movie files onto a Kaleidescape server to be viewed and played from there? No, you can't. Kaleidescape's early success (its first movie server was back in 2003) was based around treating the film companies with respect, and files from dubious sources were never part of its ecosystem. But what if you already own a movie on disc? You paid for it already, so can you use it in the system?

Remarkably, yes, although sadly only via legacy Kaleidescape products. The company's former Disc Vault products can be grouped with a Strato C/Terra system and can play DVD discs stored in the vault… but not Blu-rays. There is a 'disc-to-digital' programme: if you 'register' Blu-rays or DVDs by connecting an approved USB Blu-ray drive to the USB socket of a Strato, you may receive an offer to get the digital version at a special price. Which is all a little complicated, and most likely leaves your existing movie collection requiring an entirely different playback system.

CONCLUSION

It's hard to judge the Kaleidescape ecosystem comparatively, because there's really nothing else like it! Kaleidescape has a strong record as the go-to high-end domestic movie serving system, its appearance in Australian home cinema installations for more than 20 years proving that the experts rate it for not only quality but also reliability.

It certainly delivers superior movie quality to conventional video streaming, all while equalling disc playback quality without the hassle of messing about with discs — and there is indeed a lot to be said for that.

Of course, you have to pay considerably more than even a premium 4K Blu-ray player, and you may still need to buy a Blu-ray player anyway, to play discs you already own! Otherwise, for those with the funds for a superior movie playback system, there's very little to prevent our full recommendation of Kaleidescape to those wishing to install a high-capacity Terra Prime server and multiple Strato Vs, Cs and Ms around your home. In fact, we'll be extremely jealous.

SPECIFICATIONS

Kaleidescape

Strato V player: $7,499
Strato C player: $5,899
Strato M player: $3,999
Terra Prime servers:
HDD: 12TB ($10,999), 24TB ($19,999), 48TB ($29,499), 96TB ($48,999) /
SSD: 8TB ($17,999), 31TB ($45,299), 123TB ($135,999)
Strato C dimensions (HWD): 3.9 x 20 x 25cm
Strato C weight: 1.9kg
Terra Prime 8TB SSD dimensions (HWD): 3.9 x 20 x 36cm
Terra Prime 8TB SSD weight: 3kg

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LEICA
CINE 1

PROJECTOR

Reviewer Jez Ford

When we think of design icons in hi-fi and AV, we might turn first to Denmark, or perhaps the US, UK and Japan. But if you ask a photographer the same question, it's more likely to be Germany, and specifically Wetzlar, home to Leica Camera AG, makers of legendary cameras since Oskar Barnack at Leitz (as Leica was officially called until 1986) came up with the first commercially successful 35mm still camera.

In the 1860s, Ernst Leitz, a talented engineer, joined a small optical company in the town of Wetzlar to make initially telescopes, and subsequently microscopes. But while Ernst rose quickly to take over the whole operation, it was his son, Ernst Leitz II, who committed to building Barnack's revolutionary compact camera, with its idea of using 35mm cinema film, soon to become the standard for still photography.

Right from the outset, then, it was image quality that drove Leica as a company. The inherent advantages of 35mm film in a compact camera saw Leica's format survive right up to (and like vinyl, beyond, for fans of the analogue) the arrival of digital photography. So a full century has seen Leica delivering the finest, neatest and most famous imaging devices on the planet: legendary, gorgeous, and considerably expensive.

Its lenses are a key part of the equation, of course. Leica's ability to deliver world-class glass has made its lenses legendary among photographers, and got Leica's cameras on NASA's shortlist for the space race. During John H. Glenn Jr's triple-orbit mission on 20th February 1962, he used a Leica Ig camera to capture the first human-shot colour photographs of the Earth from space.

So who better to put its lenses into the projectors that bring big-screen images back to the home? As Leica puts it, its business is "moving people through imagery," and the Cine 1 projector allows it to deliver imagery to the living room as home entertainment.

Which is perhaps not too much of a departure for the company, if we step back a little in time. Photography has always been a form of home entertainment in itself, and in many 1960s and '70s homes the biggest available imaging system would have been a projection of 35mm transparencies mounted in slides, displayed up on a large square screen so much bigger than any available TV of the day that even the grainy Kodachrome family holiday pictures looked impressive.

Many was the home where this task was trusted to a stylish Leica/Leitz Pradovit slide projector, the height of home projection in its day, complete with a cabled remote control which allowed you to shuttle 35mm slide carousels across a smoky sitting room without even needing to put down the whisky tumbler.

Hence Leica sees the Cine 1 as representing its return to lean-back lounge entertainment. So welcome to 'Cinema TV', an ultra-short-throw projector with a TV tuner, smart streaming and sound system integrated. You can plug in external sources, but the Cine 1 could provide everything you need in one: it's a deliberate alternative to a TV.

Not only that, it does so in style, with an instantly iconic exterior, looking functional but gorgeous, like the cameras — though the Cine 1 is four times wider than an SL2, at 60cm in width. The console really is so pretty that even if it did nothing at all we would be happy to have its silver top surface motoring open and close on command, that classic red Leica dot central between its space-age Bauhaus curves. It's just a stunner.

Is it also expensive like a Leica? That depends on your point of view. In the consumer AV market, the pricing of $13,999 for the 100-inch version and $14,999 for the 120-inch is certainly above any comparable competitor. But in a catalogue shared by a Leica Watch ZM 2 Monochrom at $23,900, or a 'Leica SL2 Vario (camera) Christmas Bundle' at $15,599, the Cinema TV prices fall more into line. 'If you want the best?', they're saying. It is, after all, a Leica.

To those Cine 1 prices you would be wise to add the price of a Leica-branded ambient-light-reflecting fixed screen, which is highly recommended both by Leica and ourselves, currently selling from $2,690 for the 100-inch size, and to consider the offer of installation as well.

MAJOR LASER

So the Cine 1 sees the German company reclaiming home entertainment territory long ceded first to Japanese companies, then Korean, and now Chinese. And it is with one of the current Chinese technology leaders that Leica has partnered for its return.

Initial announcements of the Cine 1 termed it a 'Laser TV'; this has since evolved to 'Cinema TV', perhaps to disguise the partnership. But when it turns on and the screen doors open up to a VIDAA user interface, the connection with Hisense is clear. Hisense has already found success with this complete 'Laser TV' entertainment concept, so of course one must wonder exactly how much Leica has made this Cine 1 truly its own, and how much is primarily a recasing exercise. We asked Leica Australia's Shaun McMahon that very question.

"So Leica with Hisense — it is a technology partnership, effectively," he says. "We're offering them a bit of guidance in terms of lenses, and they're providing us with know-how in terms of the rest of the unit, including VIDAA. We're not going to supply Leica Summicron lenses to Hisense, that's where we stop short, but it is a collaboration."

> Four sophisticated aspherical Leica Summicron lenses... each manufactured to Leica standards, and precisely matched to the image size

So, Leica has applied its own external design to make the Cine 1 look so lovely and luscious. But it's Leica's lenses that are very much the crucial thing here.

ULTRA-SHORT IS ULTRA-HARD

The lens quality is always crucial in a projection system, of course, but even more so in an ultra-short-throw projector, because of how it is positioned. The convenience of a projector placed close to the wall is undeniable, but the technical challenge of delivering an even spread of light and accurate imaging from such a position is considerable. Chief among the challenges is the quality of the lenses, both within the internal imaging system and especially at the exit lens, with its unenviable task of delivering a rectangular image thrown up from almost directly below the screen.

"I believe there are four main lenses being utilised in the Cine 1," says McMahon, "all Leica Summicron lenses."

Leica has a long history and an almost unmatched reputation for producing high-quality optics, with its Summicron lenses using high-quality materials and being known for exceptional sharpness, even when used wide open, and for their ability to produce high contrast and rich, natural colours. Usually, of course, such Summicron lenses ensure the quality of image capture, whereas here the lenses are at the other end of the reproductive chain, rendering previously captured images back into the real world with the minimum of distortion.

One interesting note is that the Cine 1 projector has no zoom abilities, nor even a focus ring; you simply put it in exactly the right place. "Part of the reason they've gone for the fixed and not the tele is the fact that they wanted to use prime lenses," explains McMahon, "which goes back to our photography, in that fixed lenses will give you the optimal performance, but you obviously have to have them set up specifically. A prime lens has a fixed focal length, no zoom — if you're shooting on a 50 mm prime lens, you don't move the lens to zoom; you move yourself.

"So when the Cine 1 is calibrated for the 100 or 120 inches and set up perfectly, you should get the optimal performance out of those lenses. That's not to say we're not looking at doing some sort of telescopic lens technology in the future, because we are looking at expanding the range, that's something we're researching, but for the time being we've decided to play to our strengths and go with prime lenses on these two."

So the potential advantages of Leica-standard glass come from four sophisticated aspherical Leica Summicron lenses in combination, each manufactured according to Leica standards, and precisely matched to the image size here. Leica's own image processing is also employed — Leica Image Optimization (LIO). This brings 'special algorithms' to bear with the

THE FLAT SILVER TOP SURFACE IS SPLIT IN THE MIDDLE AND IS CLOSED AS A DUST COVER WHEN NOT IN USE, SLIDING OPEN MECHANICALLY WHEN YOU POWER IT ON.

promise of, says Leica, 'particularly natural colour rendition, richly detailed colour gradation and outstanding contrast ratio'.

Behind the glass is triple RGB laser technology and a DLP 4K imaging system with Dolby Vision HDR compatibility, supposedly able to deliver 3000 ANSI lumens as well as colour accuracy to more than 100% of the Rec.2020 colour space. It uses a 0.47-inch Texas Instruments DLP micromirror device with the XPR system of flipping its native 1920 × 1080 mirrors four times during each frame, thereby delivering Ultra HD's full resolution of 3840 × 2160 pixels.

Once you're up to Ultra High Definition, there's enough resolution to use a bit and lose a bit for the benefit of screen straightening, most commonly vertical keystone correction. But resolution is resolution; you want to keep it if you can, and you do so by positioning the projector as perfectly as possible.

This is doubly the case with an ultra-short-throw design. So while there is manual and even automatic geometric correction available via a mobile app within the Leica settings here, your best option is to have the Cine 1 square in front of your screen position, out from the wall the perfect distance to have the image fit the 100-inch (in our case) screen width. Then adjust the revolving feet to get the picture perfectly rectangular — we needed the front feet rotated to lift them slightly higher than the rear ones. Indeed, you will need to do all this initially at least roughly before mounting the screen on the wall, in order to establish the ideal screen position for your benched Cine 1. And don't forget: never neglect the importance of a high-quality screen, as you are hobbling your projector without one.

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> We found getting the Cine 1 into position so easy that we took to sliding it out of the way on its trolley during periods it wasn't in use

INTO POSITION

As with all ultra-short-throws, you'll find that to fill a 100-inch diagonal screen, you'll need the projector body surprisingly far out into the room. In our case the back of the Leica was about 28cm from the wall, leaving the front a full 65cm out; the more important measurement may be for its front feet, since they need to be on your benchtop — they are some 60cm from your wall, so you need at least that depth of bench. That's pretty deep — go measure your own TV bench now. So you could do what we do and have it on a sturdy moveable stand, rather as we did our Leitz Pradovit slide projector back in the day, but here much closer to the wall.

Ultra-short-throw projectors commonly suffer from the 'bump' effect — they stick out so far into the room that people can bump into them, and their alignment is then thrown all off. This is quite a pain with carefully aligned ultra-short-throw designs, but unusually we found it extremely easy here to resquare the image on the screen compared with previous ultra-short-throws we've tested. When speaking to Leica they seemed to think that positioning was tricky, hence they have an installation service available in Sydney, Melbourne and Brisbane and through dealers elsewhere. For putting the company's screen together and mounting it, we would certainly consider paying the professionals. But we found getting the Cine 1 itself into position so easy that we took to sliding it out of the way on its trolley during the periods it wasn't in use.

TV ALTERNATIVE

This is a fully smart TV, with a TV tuner and networking for its smart operating system. As noted, the operating system and user interface is VIDAA. Which is no bad thing, as VIDAA is a very good interface — attractive and clear. Its main screen keeps physical inputs away under a virtual or remote button, while the top third of the initial screen offers a two-pane choice of 'VIDAA Free' or VIDAA App store.

'VIDAA Free' is something rather less than the 'free' content served by competitors. During our use, this section simply collated some recommendations of content from Tubi, ABC, Plex and, er, 'Toon Goggles', and only a total of 81 titles in all. The free 'live' channels you get on a VIDAA Hisense TV were not available.

So for content you're far better off surfing the many, many apps to which the VIDAA app store gives access. Some are preloaded, others you'll need to search and install. There are four of the five catch-up on-demand apps — ABC, SBS, 9 and 10, but not 7play. And there's pretty much every streaming service except Binge, Kayo and Foxtel, who we gather wouldn't extend VIDAA's licence for these services to a third-party user.

Your other option for content is to stream it across; there's AirPlay, which can be used for screen mirroring from a Mac. This worked great for our own videos and YouTube; rather annoyingly Binge, like Netflix, seems to block AirPlay video streaming of its shows as soon as we started, so there are limitations here too.

All such limitations can be surmounted simply by plugging in your laptop (or a media player) via HDMI. The Cine 1 sports three HDMI inputs, two of which are HDMI 2.1, one of which is HDMI 2.0 — so use the former for gaming, since it can receive above 4K/60. HDMI 2.1 is also officially compatible with Dolby Vision HDR and HDR10+ with metadata, though these should work fine through HDMI 2.0 anyway. More importantly, one of the HDMI sockets (number 2) has eARC, the Audio Return Channel, so you could use this path — or the provided optical audio output — to attach a sound system larger than the one built into the Cine 1.

VISUAL AND SONIC DELIGHT

This is one of the larger ultra-short-throw projectors to have come through our test room, and we have never had one so able to banish ambient light effectively. This is assisted by the ambient-light-rejecting screen, but is also down to the Cine 1's inherent brightness, and perhaps the lack of loss through those higher quality lenses. Between trying various screens, we found that even straight on the wall it still had enough in the way of illumination to deliver even a fully bright cricket match with a good deal of diffuse ambient light in the room.

This ability to deliver during daylight is a huge advantage for a product positioning itself as an alternative to a TV rather than being a 'special event' projector. Most UST rivals fall short on this crucial criterion, nor do they have TV tuners built-in to make casual daytime viewing a possibility.

During those daylight hours the projector inevitably loses something in contrast and colour to a good television. But it gains vastly in the size of its presentation. Breakfast TV is enormous. True crime shows are downright alarming. The impact of Oliver Stone's *JFK Revisited*, streaming from SBSOnDemand, was only magnified by such, er, magnification.

That's especially true once the day fades. Definition and clarity are then nothing short of exceptional, no doubt again assisted by the high quality of Leica's glass.

When we plugged our demo 4K images into the USB-A slot, the DLP four-flip process of XLR seemed to reveal perfect sharpness down to a two-pixel level for 4K and an impression of single-pixel resolution, with seemingly zero misalignment between colours here nor, as noted, any dearth of brightness from the time segmentation of the four pixel positions. Most impressive of all here, perhaps, was that the separation of two pixel lines remained equally clear all the way to the corners of the test image, a real sign of lens quality. The black test slides also showed no notable greying out of blacks anywhere on screen. In a darkened room, black bars above the movie should seem perceptually full black.

Such attributes yield simply beautiful

AND NOW WE HAVE LEICA'S CINE PLAY 1…

Leica's second new-era shot at projection is, unsurprisingly, a smaller and more affordable unit — not strictly portable (it doesn't have battery power and once on its optional stand the combination is more than 12kg) but fairly easily moved around the home, and less than half of its sibling's price, at $5,990.

It's clearly cut from the same cloth as the Cine 1 and once again a collaboration with Hisense, clearly based on one of the Chinese brand's own mini projectors (likely the C2 Ultra).

It too has smart setup systems that quickly get the image into place and suitably squared up, wherever you may choose to shine it, and also has speakers (quite full and substantial, not weedy) and streaming built-in alongside several physical and wireless connections (two HDMI 2.1 inputs, one of which is eARC, two USB-A slots, Ethernet and wi-fi, AirPlay and Bluetooth).

The light source is, again, a triple RGB laser, with all the advantages of long life and no bulb replacement: good for more than 25,000 hours, says Leica, which would be four hours of use each day for 17 years.

The imaging device is a 0.47-inch Texas Instruments digital micromirror, its native resolution (probably 2K) increased to a claimed 4K by flipping those micromirrors and delivering four hits to the screen per frame, shifted by half a pixel in four directions to produce something close to, if not native, full 4K.

Brightness is quoted as "up to 3000 lumens"; native contrast is 1500:1 but dynamic contrast lifts this to 2 million:1; more than 100% of the Rec.2020 colour gamut is covered; and Dolby Vision, HDR10+ and broadcast HLG HDR flavours are supported.

In a nutshell, we can summarise by saying we've not seen a better mini projector. You get better images from full-size projectors at higher prices, certainly; more effortless cinematic images notably when given the inherent stability of native 4K, rather than the pixel-flipping DLP employed here. But from a versatile easy-to-position mini projector, this was an unusually powerful image.

The sharpness is fully edge-to-edge and the focus level is impeccable. Movies played thrillingly on our big screen: this Leica did a lovely job of *Red Sparrow*'s deliberately muted Cold War colour palette, and that proved a literal contrast with the bright plant greens, orange fireballs and mega-motion pans delivered impressively in *The Fall Guy*.

The Cine Play 1 is highly competitive both at its own level, and against the unit on which it is based. It's a significantly superior smart mini projector.

images. National Geographic's *Secrets of the Elephants* (4K, Dolby Vision, 5.1) is full of thrilling photography across five different elephant habitats, and it expands magnificently to the big screen through the Cine 1. Bright but realistic forest greens, the deep detail in textures of elephant skin, the ability to see details even in shadows, and the impact from the screen size (near-lifesize elephants!) took this great doco series to the next level.

That integrated sound system did well, and its Dolby Atmos compatibility did seem worth having. The first soundtrack which really burst to life was the first disc we played from a physically connected 4K Blu-ray player. *Paddington 2* (on 4K Blu-ray) proved a sonic delight. It did an extraordinary job of providing crisp central stuff for dialogue and effects — for the bear and his banging bucket, say — while delivering the soundtrack entirely separately in a wider soundstage of quite some depth.

Atmos soundtracks are delivered with still more clarity; just don't expect too much. Lesser soundtracks, of course, sound less well separated, and can even get a little boxy; switching to a less bassy sound mode can help clarify this.

Overall, the sound is far better than almost any flatscreen TV will give you, and the match of most mid-price soundbars. Looking at the space available for the sound system — really just the front few inches of the chassis — it's as effective and room-filling as you could expect.

Visually, too, *Paddington 2* was a feast of detail, colour and motion. Such detail! — Paddington's own ever-ruffling fur is artfully animated and detailed, but so are real-life elements like the grey straw hair seemingly plonked on Julie Walters' head during a reaction shot in the courtroom, the softness of her fluffy beige hat leaping out, with two clockwise-woven braids in colours both strong and accurate, not to mention Walters' finely etched (and not-too-craggy) skin tone or her deep purple bathrobe jacket with slight wear-marks visible on its thick pile.

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NETFLIX
YouTube
prime video
deezer
Leica

There are many motion challenges in *Paddington 2* — the water in the muddy river of the opening, the fence railings as he cycles around Windsor Gardens, the barbershop sequence, the window cleaning: it's like a demo disc with a plot. The processing here passed muster almost every time.

Leaving discs behind, we switched to the internal smart VIDAA interface to watch examples from the streaming apps. Disney+ programming with Dolby's Vision and Atmos proved similarly impressive. We rewatched chunks of *Get Back*, marvelling again at the quality obtained by Peter Jackson's team from the original 16mm footage. We watched the finale of *Welcome To Wrexham S02* twice on this system, the handheld match footage almost disorientating when writ so large, but the interview headshots rendered with every pockmark and eyebrow hair sharp, every detail in that extraordinary celebratory street parade captured for the record — and all this despite the show being only HD, not 4K (an apt reminder that 2K is actually not so far behind 4K in many circumstances).

CONCLUSION

The consumer ultra-short-throw projector category came of age once they were reimagined as a TV replacement, with streaming dongles and built-in speakers. Hisense took the idea to another level with its Laser TVs, and now Leica has taken those Laser TVs to another level.

Principally it has achieved this by upgrading the lenses, but also the look, creating a premium product which we reckon will attract higher-end buyers as much with its product design, which is so gorgeous, as with its performance, which is pretty thrilling, even overcoming a good whack of ambient light, though reaching its ultimate best in a darker room.

The VIDAA interface is excellent; the laser light source boasts 25,000 hours of service life; the whole thing seems to use less power than a comparable TV, and yet you get the best and brightest ultra-short-throw image we've ever seen.

And as for the price, well, it's no secret that good lenses are not cheap. Plus, the thing looks like an instant design icon, it's the best we know in its category, and hey — it's a Leica.

One last thing: remember that Pradovit slide projector we grew up with in the 1970s? We had it out recently, and it's still working. So besides the company's preeminence and prestige, you can hopefully look forward to a long future for all that rolling entertainment up there above the Cine 1's red Leica dot, providing long-term immersion for your movies, streaming, gaming, even *Pointless*, all writ large up there on the big screen.

SPECIFICATIONS

Leica Cine 1

Price: $13,999 (100-inch); $14,999 (120-inch)
Fixed screen: $2,690 (100-inch); $3,990 (120-inch)
Projection technology: TI 4K XPR DMD, triple laser
DMD: 0.47-inch, native resolution 1920 x 1080
Screen resolution: 4K UHD, 3840 x 2160
Light output: approx 3000 lumens
HDR modes: HDR10+, HLG, Dolby Vision
Contrast ratio: ~1000:1
Dynamic contrast: ~2,000,000:1
Throw ratio: 0.25
Inputs: 3 x HDMI, 2 x USB-A, 2 x antenna in, tuner, AirPlay, Bluetooth, screen mirroring, Ethernet, Wi-Fi
Outputs: HDMI ARC, optical, minijack headphone out
Smart TV interface: VIDAA 6.0
Dimensions (HWD): 14.9 x 60 x 37.8cm
Weight: 13.6kg

Contact: Leica Australia
T: (03) 9248 4444
W: leica-store.com.au/cine1

INTRODUCING THE LEICA

CINE PLAY 1

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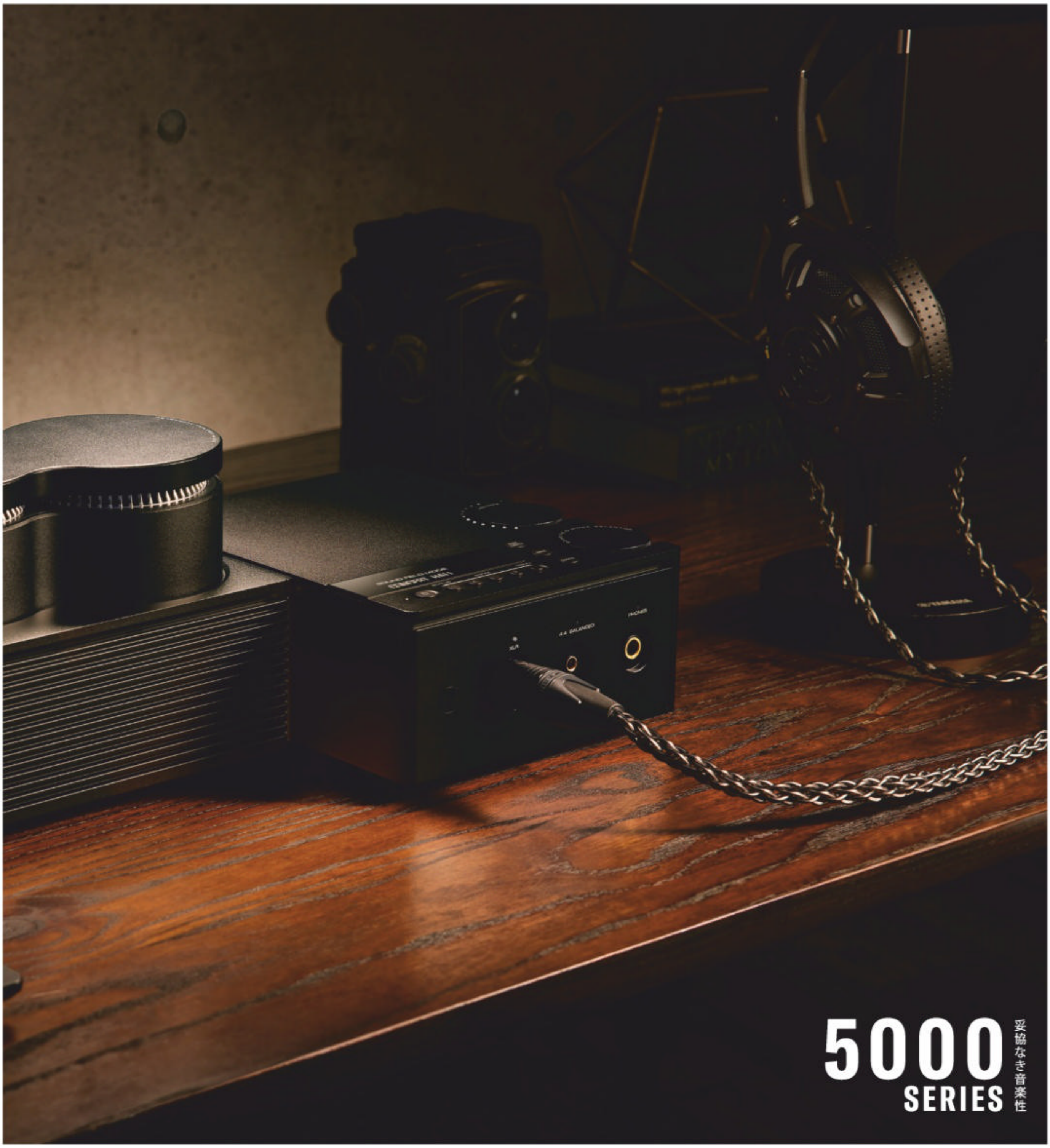

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